EFFICACY OF AN INTERNET-DRIVEN THERAPY (INTERAPY) FOR POSTTRAUMATIC STRESS AND THE ONLINE THERAPEUTIC ALLIANCE

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Abstract

Background: Since the nineties an internet-driven treatment approach (Interapy, Lange et al., 2000) is offered to treat individuals with Posttraumatic Stress Disorder (PTSD). Interapy includes psychoeducation, screening, and a protocol-driven cognitive-behavioral treatment (CBT). **Objective:** This thesis cross-culturally evaluated Interapy for PTSD and examined the quality of the online therapeutic alliance. A theoretical introduction of PTSD, computer-based interventions and the relevance of the therapeutic alliance in face-to-face and online therapy is given. The first study focused on the relevance of the early online therapeutic relationship as predictor of treatment outcome. The second study was designed to cross-culturally examine the efficacy of Interapy in a German speaking population. Also, the quality of the late online therapeutic alliance as a predictor of treatment outcome and its development during the therapeutic process was examined. **Method:** 96 patients with PTSD were randomly allocated to 10 sessions of internet-based CBT conducted over a 5-week period or a waiting list control group. Severity of PTSD was the primary outcome. Additional measures were depression, anxiety, mental and physical health. Follow-up assessments were conducted 3 months after treatment. Dropout rate during the 10 sessions treatment was regarded as rough indicator of alliance. The Working Alliance Inventory (WAI, short form) was administered at the fourth and the last treatment session. **Results:** In the first study, including only data from the treatment group (N= 48) high alliance ratings (4^{th} session) were found. Only moderate non-significant associations emerged between the early working alliance and treatment outcome. The second study (N= 96) revealed that the treatment group experienced significantly greater improvements on PTSD severity and other psychopathological measures from baseline to post-treatment assessment than the control group. These effects were sustained during the 3-month follow-up period. Significant improvement of the online working alliance during the course of treatment and a substantial association between the quality of the online therapeutic relationship at the end of treatment and treatment outcome emerged. **Conclusion:** Interapy proved to be a viable treatment alternative for PTSD with time stable treatment effects. High ratings of the therapeutic alliance and low dropout rates indicated that a positive and stable therapeutic relationship could be established through the internet. However, the role of the online therapeutic alliance as potential predictor is not fully understood yet.

Keywords: Posttraumatic Stress Disorder • working alliance • therapeutic relationship • online therapy • internet • cognitive behavioural therapy • randomized controlled trial.

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Widmung

Meiner Mutter, weil Du alles richtig gemacht hast

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Abbreviations

APA „American Psychiatric Association“

BSI „Brief Symptom Inventory“. Self-report questionnaire to assess psychopathology. Short version of the Symptom-Checklist-90-R (SCL-90-R) of Derogatis (1977). In this study only the subscales „Anxiety“ and „Depression“ were used. Description in chapter 6.

CBT Cognitive Behavior Therapy

DSM „Diagnostic and Statistic Manual of Mental Disorders“. Diagnostic system of the APA. Currently the fourth version (DSM-IV) is used.

ICD „International Classification of Diseases“. Diagnostic system of the World Health Organization (WHO). Currently the tenth version (ICD-10) is used.

IES-R „Impact of Event Scale – Revised“. Self-report questionnaire to assess symtpoms of posttraumatic stress. Original version: IES, Weiss & Marmar, 1997; German version of the IES-R: Maercker & Schützwohl, 1998. Description in chapter 6.

M Arithmetic mean („mean“);

N Number of participants included in the analysis

PTSD „Posttraumatic Stress Disorder“. Psychological disorder resulting from a traumatic event

SD Standard deviation

SF-12 Short version of the „Short Form – 36 Health Survey“ (Ware & Sherbourne, 1992). Self-report questionnaire to assess health-related quality of life and subjective health.

WAI „Working Alliance Inventory“. Self-report questionnaire to assess the quality of the working alliance (Horvath & Greenberg, 1989).

1 Overview

Exposure to life-threatening events causes in most survivors symptoms of psychological distress in the ensuing days and weeks. Most people who initially experience a reaction of psychological instability recover gradually (Norris & Kaniasty, 1994; Riggs, Rothbaum, & Foa, 1995). However, some individuals continue to suffer considerable difficulties in readjusting to life afterwards. This condition is frequently characterized by clusters of symptoms including involuntary intrusions of the traumatic event, avoidance behavior and hyperarousal symptoms. It is associated with considerable psychological and interpersonal impairment. Persistence or worsening of these symptoms over an extended period of time is called posttraumatic stress disorder (PTSD). PTSD is a common condition with a life time prevalence of around 8% in the general population (Kessler et al., 1995).

In the past few decades a number of viable and effective treatment options have been developed to combat the psychological sequelae of traumatic experiences (Zoellner, Feeny, Cochran, & Pruitt, 2003). It has emerged that cognitive behavioral treatment approaches (CBT) work especially well when treating individuals suffering from PTSD (Foa, 2000; Foa & Meadows, 1997). However, a considerable percentage of individuals is unable to take advantage of this treatment opportunity. Patients with limited mobility and patients living in remote areas have often little chance to access treatment. Moreover, people suffering from intense feelings of shame and guilt - features frequently associated with PTSD (Kubany, Haynes, Abueg, & Brennan, 1996) - may have difficulties in overcoming their inhibitions to enter a consulting room due to fear of stigmatization and devaluation.

In the past couple of years, psychological help for Posttraumatic Stress (PTS) has also been available over the internet. In the ninties a group of researchers from the University of Amsterdam developed an internet-based treatment approach (Interapy) based on principles of CBT to treat PTS (Lange et al., 2000). Internet-based treatment approaches offer a number of advantages. Individuals can be reached worldwide at any time. They can communicate from their homes. People too ashamed to meet their therapist face-to-face might benefit from the visual anonymity that is granted by internet-based communication. However, internet-driven psychological interventions entail a number of potential

deficits whose influences have not yet been fully understood. Some experts argue that the internet with its absence of body language and nonverbal interaction causes human interactions to become impoverished and sterile. Furthermore, they argue that this setting does not allow any meaningful and stable relationship to develop. This aspect is particularly relevant to the discussion of internet-driven psychotherapeutic treatment approaches as the quality of the therapeutic alliance was found to be important for the treatment outcomes across different face-to-face treatment approaches (Gelso & Carter, 1985; Horvath & Greenberg, 1994; Horvath & Symonds, 1991; Martin, Garske, & Davis, 2000).

The aim of this thesis was to study the efficacy of Interapy, an internet-driven cognitive-behavioral treatment for PTSD in a German speaking population. Furthermore, the quality of the online therapeutic relationship and its relevance to the therapeutic outcome was investigated. The following issues will be covered in the subsequent seven chapters. First, the concept of PTSD and current treatment approaches are introduced. As this is covered in great detail elsewhere, I will only briefly outline this topic. For more indepth information I refer to standard literature (e.g. Horowitz, 1997; Maercker, 2003; Nutt, Davidson, & Zohar, 2000; van der Kolk, McFarlane, & Weisaeth, 1996). The following chapter examines the history and current influence of new technology in psychotherapy with a focus on current computer-assisted treatment approaches for PTSD. Chapter 4 discusses the role of the therapeutic alliance in face-to-face psychotherapy. Chapter 5 contains a short-term review of studies on the efficacy of internet-driven treatment approaches. In addition, theoretical aspects of the therapeutic relationship online are discussed along with the advantages and potential risks of online therapy. Chapter 6 includes data from our study on the role of the online therapeutic alliance as a predictor of the outcome. To examine the efficacy of Interapy, we carried out a randomized controlled trial. Chapter 7 presents data concerning the efficacy of the internet-driven treatment approach and examines the development of the therapeutic alliance during the course of treatment. The final chapter of this thesis summarizes and discusses the main findings of the present study and attempts future issues and direction of clinical care, service delivery, and research in the area of internet based treatments. This study was only possible through intense teamwork. The term “we” is used to indicate the close cooperation with

Birgit Wagner and Andreas Maercker. Some of the chapters of this thesis were submitted for publication as separate manuscripts and therefore some overlap was inevitable.

2 Posttraumatic stress disorder

Posttraumatic stress disorder (PTSD) is the diagnostic classification that best describes the constellation of symptoms resulting from exposure to traumatic experience of an extremely stressful nature. In 1980, posttraumatic reactions were first introduced into the official psychiatric nosology as PTSD in the diagnostic manual of the American Psychiatric Association (APA) (DSM III, 1980) and in the 10th version of the International Classification of Disorders (ICD-10; Dilling, Mombour, & Schmidt, 1991) of the World Health Organization (WHO). From a historical standpoint, recognition of PTSD with a predefined etiological component as opposed to being due to an inherent weakness as psychiatric disorder was an important development. DSM-III embodied the notion of a single entity following traumatic events, thereby implying that there was a common final pathway in response to traumatic events (McFarlane, 2004). This notion was based on the observed similarities and consistency of behavioral emotional and physiological reactions following a traumatic event independent of its nature. Before 1980, posttraumatic stress reactions were captured in terms such as “railway spine”, “compensation neurosis”, “combat fatigue” “shell shock”, “war neurosis” and later “rape syndrome”, “concentration camp syndrome” showing considerable overlap in the described symptoms with what is now defined as PTSD (Schnurr, Friedman, & Bernady, 2002).

2.1 Definition

2.1.1 Trauma

The term “traumatic” these days is used to describe a wide range of distressing experiences. In spite of this, the clinical definition based on the mental health classification systems is fairly narrow. Traumatic events are by their nature sudden, unexpected, and threatening. According to the current DSM-IV (APA, 1994) a person has had a traumatic experience who has experienced, witnessed or was confronted with an event that involved death or the threat of death, serious injury, or a threat to the physical integrity other people (first stressor criterion). Examples of traumatic events may include sexual violence such as rape or child abuse, domestic violence, serious accidents, natural disaster, or

the unexpected death of a loved one. An important feature of the current definition of a traumatic event is that it has to be associated with the experience of intense fear and the feeling of helplessness (second stressor criterion). Traumatic events are commonly categorized in type I trauma (impersonal trauma, e.g. natural disasters etc.), versus type II trauma (man-made disasters e.g. torture) as well as acute trauma (e.g. motor vehicle accidents, natural disasters) versus chronic trauma (e.g. repeated sexual abuse, participating in combat, life-threatening diseases). It appeared that events that are interpersonal, violent, and intended are much more likely to cause PTSD than events that are traumatic but have a natural cause, or are at least impersonal (e.g. accidents) (Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993).

2.1.2 Symptoms of PTSD

In the current DSM-IV (APA, 1994) PTSD symptoms are classified in three clusters of symptoms: (a) reexperiencing of the trauma, (b) avoidance of trauma-related stimuli, and (c) increased emotional arousal. Re-experienced phenomena include nightmares, flashbacks (intrusive thoughts of the traumatic event), visual, auditive, olfactory and tactile reminiscences related to the traumatic event and the preoccupation with the event and its aftermath. Avoidance of trauma-related stimuli includes numbing and phobic avoidance, which refer to two related but separate problems. Numbing is the emotional response that follows prolonged periods of high stress. It is described by patients as an inability to feel any positive emotion toward individuals or activities. Phobic avoidance is a behavioral symptom involving the individual's efforts to remain in safe areas and not to approach things that are reminiscent of the traumatic event. Finally, symptoms of hyperarousal, both physiological and subjective, complete the symptom description of PTSD. The most salient of the arousal symptoms include sleep disturbance, startle reactions, irritability, and decreased concentration. To meet diagnostic criteria for PTSD, one needs to have experienced strong emotional reactions following the confrontation with a traumatic event, experience at least one reexperiencing symptom, three avoidance symptoms, and two increased arousal symptoms. Furthermore, the symptoms have to persist for at least one month. An overview of all symptoms named in the DSM-IV is given in Table 1.

Table 1: Symptoms of PTSD according to DSM-IV.

A. Stressor criterion A1. Exposure to a stressor A2. Emotional reaction to stressor
B. Reexperiencing of the traumatic event (> 1 symptom) : B1. Intrusive recollections B2. Distressing dreams B3. Acting/feeling as though the event were recurring B4. Psychological distress when exposed to reminders B5. Physiological reactivity when exposed to reminders
C. Avoidance of stimuli associated with the trauma and numbing of general responsiveness (≥3 symptoms): C1. Avoidance of thoughts, feelings, or conversations associated with stressor C2. Avoidance of activities, places, or people associated with the stressor C3. Inability to recall important aspects of trauma C4. Diminished interest and participation in significant activities C5. Feelings of detachment from others C6. Restricted range of affect C7. Sense of foreshortened future
D. Persistent symptoms of increased arousal (≥ 2 symptoms): D1. Sleep problems D2. Irritability of outburst of anger D3. Concentration problems D4. Hypervigilance D5. Exaggerated startle response
E. Duration ≥ 1 month
F. Disturbance causes clinically significant distress or impairment in social, occupational, or other important functioning

2.2 Prevalence of Trauma and PTSD

Several studies have examined the prevalence of PTSD and revealed a number of important points. First, the experience of traumatic events is extremely common. DSM-III-R (APA, 1987) defined traumatic events as being “outside the range of normal human experience”. This was due to the assumption that disasters, extreme violence and horror were rare experiences. However, later epidemiological studies revealed that the prevalence of traumatic events is far higher than previously estimated. The National Comorbidity Study (NCS) surveyed a representative national sample of 5877 persons in the United States and found that 41% of women and 61% of men had been exposed to traumatic events (Kessler Sonnega, Bromet, Hughes & Nelson, 1995). In addition, 35% of the men and 25% of the women reported having experienced more than one traumatic event. In Australia similar rates of trauma exposure of 49% for women and 65% for men were found (Creamer, Burgess, &

McFarlane, 2001). In a recent epidemiological study in Sweden, Frans, Rimmö, Aberg, and Fredrikson (2005) surveyed a randomly selected sample of 1826 individuals aged from 18 to 70 years (*M*= 43). They found that 77% of women and 85% of men had been exposed to traumatic events The authors reported a life time prevalence of PTSD, of 7,4 % for women and 3,6% for men.

Two studies of German adolescents carried out in Dresden, (Maercker, Michael, Fehm, Becker, & Margraf, 2004), and in the Munich region (Perkonigg, Kessler, Storz, & Wittchen, 2000) suggest that the prevalence of PTSD might be smaller in Germany than in the US. Maercker et al. (2004) interviewed 1966 young women between 18 and 25 years. They found a trauma prevalence of 25% for an arbitrary traumatic event. PTSD prevalence was 3%. The rates Perkonigg and his colleagues (2000) observed were somewhat lower. They interviewed 3021 individuals aged between 14 and 24 years and found a trauma prevalence among females of 18% and 26% for males. PTSD rate was 2% in females and 1% in males. Maercker et al. (2004) argued that the difference between the numbers found in the US epidemiological studies mirror to some extent changes in the definition of PTSD from DSM-IV-R to DSM-IV. But they also seem to reflect true differences in the populations such as lower exposure rates to natural disasters, violence, threat of weapons, or witnessing such events. Moreover, fewer people had participated in recent wars in the German sample compared to the US sample.

Epidemiological studies also showed that only a percentage of individuals who were exposed to traumatic stressors subsequently develop PTSD (McFarlane, 2004). The prevalence rate of PTSD among those individuals exposed to trauma was 20% for women and 8% for men during their lifetime (Kessler et al., 1995). Maercker et al. (2004) reported a conditional risk (i.e. risk given a trauma experience) for female adolescents of 15%. The rates, Frans et al. (2005) were still lower, they reported a conditional probability of 9,6% for women and 4,2% for men.

The probability of PTSD to some extent also depends on the nature of the traumatic event. A number of at-risk populations - e.g. groups of people who have experienced a particular traumatic stressor, such as crime victims, war veterans, and disaster victims - have been identified.

Among rape victims consistently high PTSD rates of 65% for men and 46% for women were found (Kessler et al., 1995). These high associations were also shown by other epidemiological studies (Breslau, Davis, Andreski & Peterson, 1991; Maercker et al., 2004; Perkonigg et al., 2000). Kessler et al. (1995) pointed out that men were more likely to experience at least one trauma during their lives, whereas women were more likely to experience a trauma associated with a high probability of PTSD (e.g. sexual assault). Other high risk-groups were individuals who had experienced combat or physical abuse, (39% and 22% respectively) and individuals who had experienced physical abuse or been threatened with a weapon (49% and 33% respectively).

The fact that only a small percentage of people develops PTSD after having been exposed to a traumatic stressor casts doubt on the initial implicit assumption of the DSM-III definition that traumatic events could cause PTSD in anyone regardless of pre-trauma vulnerability. The initial view that the traumatic event was the main agent for the development of PTSD (Yehuda & McFarlane, 1995) stands in marked contrast to a large body of research that identified vulnerability and resilience factors in the etiology of the disorder (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003). It turned out that PTSD is a complex biopsychological reaction to a stressful event. It is influenced by a variety of pre-traumatic (e.g. psychiatric history, adverse childhood, sex, age), peri-traumatic (e.g. peri-traumatic dissociation) and posttraumatic factors (e.g. coping style, social support). These factors trigger the cascade of psychological and biological processes related to PTSD (King, Engi, & Poulos, 1998; Yehuda, 2000). However, it seems to be important to distinguish between the initial development of PTSD and the maintenance of the disorder. Schnurr, Lunney, and Sengupta (2004) found that whereas the development of PTSD is associated with pre-, peri-, and posttraumatic factors, failure to recover from an initial PTSD is related primarily to factors that occur during and after the event.

2.3 Comorbidity of trauma-related disorders

A wide range of additional psychological and social problems is associated with PTSD. Kessler et al. (1995) found that 88% of men and 79% of women with lifetime PTSD had at least one other psychiatric disorder. Among the most prevalent lifetime comorbid disorders

identified in this study was major depression (men: 48%, women 49%) as the most common comorbid disorder, followed by alcohol abuse (52%, 28%), simple phobias (31%, 29%), social phobias (28%, 28%), and conduct disorder (43%, 15%). In addition, interpersonal problems were frequently found (Evans, McHugh, Hopwood, & Watt, 2003, Jordan et al., 1992) and increased rates of physical disease (Schnurr, & Janowski, 1999; Zoellner, Goodwin, & Foa, 2000) compared to the general population. Schnurr, Friedman, & Bernady (2002) pointed out that there is a considerable symptom overlap between the PTSD, depression and anxiety. They argued that this overlap might explain at least part of the high lifetime comorbidity seen in PTSD. In spite of this, it was found that these disorders also appear as independent entities. To establish whether PTSD was the primary disorder, Kessler et al. (1995) checked whether PTSD had an earlier onset than the comorbid condition. They found for most of the cases that PTSD increased the risk of the onset of a major depression. This association was confirmed by the findings of Breslau, Davis, Peterson, and Schultz (1997). Furthermore, substance abuse was likely to develop as a result of maladaptive coping attempts of PTSD. At the same time, it has also been shown that other disorders such as depressive disorders may render individuals more vulnerable to PTSD in the aftermath of trauma (Breslau et al., 1997; Bromet, Sonnega, & Kessler, 1998; Davidson et al., 1991). Research has shown that comorbidity is also reflected in treatment response. Taylor et al. (2001) differentiated in their CBT trial between responders (n= 30) and partial responders (n= 20). They found that the latter group was characterized by more severe numbing, depression, pain, and anger. The authors argued that comorbidity might serve as indicator for the use of an extended version of CBT when treating these patients.

2.4 Psychological treatment of PTSD

In the past two decades a substantial body of research has examined potential treatment possibilities. Generally, it was found that psychotherapy for PTSD lead to large improvements in psychological functioning. A recent meta-analysis including 26 studies revealed an averaged effect size (Cohen's d) for active versus waiting list control group comparisons of d= 1.11 (Bradley, Greene, Russ, Dutra, & Westen, 2005). The majority of research has focused on CBT which is also reflected in the meta-analysis of Bradley et al. (2005). Research

has produced promising evidence regarding the efficacy CBT. The studies provide strong evidence that prolonged exposure and cognitive restructuring is most effective in reducing PTSD (Foa et al., 1999; Foa, Rothbaum, Riggs, & Murdock, 1991; Resick, Nishith, Weaver, Astin, & Feuer, 2002; Rothbaum, & Schwartz, 2002). Moreover, the recently published practice guidelines for PTSD treatment indicate the great support for CBT (Foa, Keane, & Friedmann, 2000). Therefore this overview focuses primarily on this treatment approach.

2.4.1 Cognitive and behavioral interventions

2.4.1.1 Imaginal and in vivo exposure

Exposure therapy consists of a set of techniques designed to reduce anxiety and avoidance by confronting the patient with the feared stimulus (e.g. traumatic memories, images or feared situations). Exposure can be conducted either through imaginal exposure or in vivo. It is repeated until the patient's emotional response decreases (Foa & Riggs, 1995; Foa et al., 1991). Imaginal exposure typically includes guiding the patient through a vivid remembering of a traumatic event. This is achieved by emphasizing the patient's emotions, thoughts and bodily sensations during the traumatic experience. Alternatively, patients can also repeatedly write down detailed descriptions of the experience (Lange et al., 2003b, Resick & Schnicke, 1993; Schoutrop, Lange, Brosschot, & Everaerd, 1997a), listen to an audiotape of stimulus cues for exposure (Vaughan & Tarrier, 1992), or be treated with the assistance of virtual reality paradigms implemented via computer-generated imagery (Difede & Hoffman, 2002; Rothbaum, Hodges, Ready, Graap, & Alarcon, 2001). Exposure in vivo typically involves prolonged and direct confrontation with trauma-related situations and objects that evoke anxiety. Prolonged exposure (PE) to trauma-related situations, objects or memories is the most researched intervention (Foa & Rothbaum, 1998). PE was found to be effective across a wide range of trauma populations including female assault survivors (Foa et al., 1999; Foa et al., 1991; Resick et al., 2002) male combat veterans (e.g. Keane, Fairbank, Cadell, & Zimering, 1989), refugees (Neuner et al, 2004; Paunovic & Ost, 2001) and mixed trauma populations (Taylor et al, 2003). Theoretically, it is assumed that a prolonged activation of the traumatic memories leads to emotional

processing of the affective information, habituation of anxiety, and integration of corrective information. Several parameters have been found to be associated with an optimal outcome when conducting exposure therapy. It has been empirically shown that the trauma memory has to be activated before changes can occur in the patients' responses to the trauma memory and to trauma reminders (Jaycox, Foa, & Morral, 1998; Pitman et al., 1996). Therefore, emotional engagement during exposure is required. Furthermore, the duration of the exposure has to be conducted repeatedly long enough to allow the gradual process of habituation. Some clinicians fear a retraumatizing effect of imaginal or in vivo exposure to traumatic reminders and patients' reluctance to participate in such treatments (Rothbaum & Schwartz, 2002). However, empirical research has shown that the dropout-rate in exposure-based treatment of PTSD is not higher than in other approaches (Foa et al., 1991).

2.4.1.2 Cognitive Approaches

Cognitive therapy focuses on the importance of maladaptive thinking in the genesis of anxiety and affective problems. It is assumed that dysfunctional thinking patterns (e.g. catastrophizing, overgeneralizing, overestimating danger etc.) deriving from maladaptive beliefs or schemas are responsible for pathological emotions and psychiatric symptoms (Beck, Emery, & Greenberg, 1985). In the treatment of PTSD cognitive restructuring aims at identifying and challenging distorted schemas and cognitive biases of one's traumatic experience (e.g. collecting evidence, looking for alternative interpretations etc.) to initiate the development of more helpful alternative thoughts (Ehlers & Clark, 2000; Resick & Schnicke, 1992). The patients are explicitly instructed to identify and evaluate the evidence of negative automatic thoughts. In addition, they are asked to evaluate their beliefs about themselves, the trauma, the world, and the future (Marks et al., 1998). A number of studies identified cognitive approaches as an effective treatment for PTSD. Tarrier and colleagues (Tarrier et al., 1999; Tarrier, Sommerfield, Pilgrim, & Humphreys 1999) treated N= 72 trauma survivors with either cognitive therapy or imaginal exposure. Both interventions were found to be similarly effective. The authors found no differences between the two conditions post-treatment and at one-year-follow-up. In a study with N= 87 patients, Marks et al. (1998) compared four different conditions: cognitive therapy, prolonged exposure, a combination of cognitive therapy and prolonged exposure

and a relaxation control condition. All treatments groups showed significant improvements. No significant differences between the three treatment groups were detected. In contrast, the relaxation control condition showed no significant effects. Resick et al. (2002) confirmed these results in a large study with *N*= 171 patients. They found both cognitive therapy and prolonged exposure to be significantly more effective than the waiting list while no major difference existed between both active treatments. In a recent study Ehlers et al. (2003) compared cognitive therapy, the use of a self-help booklet and repeated assessement as early intervention for PTSD in motor vehicle accident survivors. A sample of *N*= 97 individuals who had PTSD in the iniatial months after an accident completed a self-monitoring period of three weeks. Those who did not recover (*n*= 85) during this period were randomly assigned to one of the three conditions. The authors found that cognitive therapy was significantly more effective in reducing symptoms than self-help booklet or self-monitoring. They reported that at 3-months and 9-months follow-up only 11% of the group who received cognitive therapy had PTSD. Of the group who received the self-help booklet 61% and of the group who received repeated assessment 55% fulfilled the criteria for PTSD. The authors concluded that cognitive therapy was an effective mean to treat PTSD already in the initial months after a traumatic event.

There has been considerable discussion regarding the relative benefits of prolonged exposure and cognitive restructuring (Bryant, Moulds, Guthrie, Dang, & Nixon, 2003). Overall, it was found that both interventions are equally effective in reducing PTSD. As outlined above, Marks et al. (1998) compared the combination of exposure and cognitive therapy with each individual method. Contrary to expectations, the combination of treatments brought no additional effects. However, in a recent study Bryant et al. (2003) found that the combination of prolonged exposure and cognitive restructuring provided additional therapeutic gains. One explanation for this might be that although both approaches are theoretically different entities, they are practically inseparable thereby making it difficult to extract the effective mechanism.

2.4.1.3 Eye movement desensitization and reprocessing (EMDR)

Since EMDR also comprises many elements of exposure and cognitive restructuring it is placed in the CBT category. EMDR is a specialized

form of imaginal exposure technique. Its unique feature is that it requires the patient to execute eye movements. To date this intervention has been used almost exclusively for treating PTSD and its associated conditions. Only recently formulations have also proposed the use of EMDR for phobias, panic disorder and other psychiatric diagnoses. In EMDR patients are instructed to visually follow the therapist's finger being rapidly moved back and forth. This procedure is meant to create an altered attention back and forth across the person's midline as they engage in the trauma memory (Shapiro, 1995). The method initiated a vast amount of research supporting efficacy of EMDR compared to a waiting list control condition (Foa & Meadows, 1997). In a meta-analysis of EMDR treatment studies, Davidson and Parker (2001) concluded that neither eye movements nor other dual tasks increase the efficacy of exposure. In view of the fact that studies have not found EMDR to be more effective than cognitive behavioral approaches including exposure, further doubts have been raised about the necessity of any additional stimulation during exposure.

2.4.2 Anxiety and Stress Management

Meichenbaum (1974) developed anxiety management training. This program teaches skills for managing anxiety. It is a combination of standard cognitive behavioral procedures for the treatment of pathological anxiety. These procedures are based on the assumptions that maladaptive coping mechanisms are responsible for the persistence of anxiety symptoms and that increasing the skills to deal with the symptoms leads to recovery (Meichenbaum, 1994). Veronen and Kilpatrick (1983) have adapted a standardized variant of anxiety management for rape victims called stress inoculation therapy (SIT). This therapy includes teaching breathing exercises, relaxation, thought stopping, self-guided dialogue, covert modeling and other coping skills. SIT focuses on training in general anxiety management techniques for three channels of fear and anxiety (i.e. physical, behavioral, and cognitive) and their application in general and in response to PTSD symptoms. The treatment rationale is that by acquiring these techniques, the patient can manage anxiety better thereby reducing PTSD symptoms. Two randomized controlled trials have included SIT groups for female assault victims (Foa et al., 1999; Foa et al., 1991). They found that although SIT was less effective than exposure methods in the follow-up, SIT was superior to a waiting list control group.

2.4.3 Psychodynamic Therapy

Psychodynamic therapy focuses on the emotional conflicts caused by the traumatic event, particularly as they relate to early life experiences. Traumatic memories and relationships are believed to be transferred into the therapeutic relationship where they can be explored and processed in a safe and non-judgmental environment (Krupnick, 2002). Drawing on earlier work, Horowitz (1997) developed a shortterm trauma-focused psychotherapy. He incorporated elements from the cognitive approach focusing on the exploration of the self-concept, other schemas and the conflict resulting from the trauma. His aim was to develop healthier perceptions of the event. In contrast to purely cognitive approaches, Horowitz (1997) emphasized the therapeutic relationship, transference and countertransference as a mean of allowing patients insight into their problems. To date little has been done to investigate the effectiveness of psychodynamic treatment approaches. The earlier version of Horowitz' treatment concept was examined in a controlled study (Brom, Kleber, & Defares, 1989). The authors compared hypnosis, systematic desensitization and psychodynamic therapy with a waiting list control group. Although all active treatments were as effective as the waiting list group, no significant differences were found between the three treatment groups. In a more recent randomized control study, Gersons, Carlier, Lamberts, and van der Kolk (2000) examined Brief Eclectic Psychotherapy (BEP), a combination of cognitive behavioral and psychodynamic approaches. It comprises elements such as psychoeducation, imaginary guidance, cognitve restructuring and the use of writing assignments and mementos. Furthermore, it includes a focal psychodynamic approach that focuses on creating meaning and integration as well as a farewell ritual at the end of treatment. Forty-two police officers were randomly assigned to BEP or a waiting list control group. The treatment was divided into well-defined phases and consisted of 16 therapy sessions. The authors found that BEP produced significant improvements in posttraumatic stress symptoms and related psychopathology in the treatment group at posttreatment. Furthermore, they reported that the improvement was maintained at the 3-months follow-up.

3 Computer technology, new media and psychotherapy

The following chapter provides an overview on computer application in psychotherapy. Many clincians are initially uncomfortable with the idea of using technology in therapy. This discomfort may arise from the apprehension that technology may interfere with the development of a therapeutic relationship (Newman, 2004). Bonger (1988) argued that psychotherapy by computer is a contradiction in terms and any efforts to establish computer-based psychological help is fundamentally unethical. A famous advocate of this position was Joseph Weizenbaum of the Massachusetts Institute of Technology. He invented an interactive computer program, now widely known as Eliza (Weizenbaum, 1966). Eliza simulates the actions of a Rogerian psychotherapist. In reaction to the user's questions and statements, the program's responses imitate the therapeutic techniques of reflection, focusing, clarification, and open-end inquiry (Suler, 1987). However, this program was never intended to serve as real psychotherapy.

In spite of this scepticism a variety of new technologies has been introduced in the past few decades. Computer technology combined with communication technology increases the range of therapeutic possibilities. Due to the high rates of clinical disorders there is a need for the provision and dissemination of alternative, accessible, and cost-effective therapeutic services (Newman, 2004). This applies especially to people challenged by financial, geographic, physical, or attitudinal barriers to traditional service (Taylor & Luce, 2003). Computer technology is being used in health care services in very different ways. Therefore, it would be useful to categorize these different interventions. As the major concern regarding online therapy frequently revolves around the therapeutic relationship, a differentiation of computer-assisted interventions according to the intensity of therapist-patient-contact seems necessary. Three different forms can be identified. First, so called "stand-alone" therapeutic computer programs were developed as a variation of self-help and self-management tools. Typically, they involve no or very limited patient-therapist-contact (e.g. during the introduction of the program). Patients work according to the instructions they receive from the computer. In contrast to regular self-help literature, stand-alone computer programs are typically characterized by an interactive process. Based on the patient's input and progress, the computer generates feedback, adapts didactic

presentations, reinforcement and future assignments (Tate & Zabinsky, 2004). Stand-alone therapeutic computer programs are typically available in the form of computer software, portable computers such as palmtops or via the internet. A second category involves computer technology being used to augment therapy – e.g. as a tool for monitoring or practicing. In this case, the therapeutic process involves regular face-to-face contact because the computer is included as an adjunctive therapy modality of a broader, therapist-led treatment concept. Finally, a more recent development are internet-based therapeutic approaches, where therapist and patient communicate via the internet either by email, videoconference, or chat. Of course, these distinctions are to somewhat construed because all the approaches show considerable overlap and share common features. Nevertheless, this differentiation should serve as a rough outline in understanding basic differences between these three categories. In the following chapter these three forms of computer-assisted therapy, i.e. stand-alone computer programs, computer-augmented interventions and internet-based interventions will be described in detail. A special focus will be on approaches using these different modalities in the treatment of posttraumatic stress disorders (PTSD).

3.1 "Stand-alone" therapeutic computer programs

Computer therapy programs have been used successfully in the treatment of a number of mental health problems. The programs are typically based on cognitive behaviour therapy (CBT). With its clear structures and systematic application of well-delineated interventions focusing on specific behaviors, CBT lends itself particularly well to computer delivery (Proudfoot, 2004). The latest technology dramatically enhances the potential of therapeutic computer-programs. Recent approaches embody not only specific active techniques but also explicitly facilitate nonspecific features (e.g. empathy, motivation and trust). They offer a stimulating and engaging interface, integrating video, graphics and animations, as well as many interactive episodes including multiple choice responding, distress/success ratings, on-screen problem solving, and diary completion (Cavanagh & Shapiro, 2004). Interventions were developed for disorders such as obesity (Burnett, Magel, Harrington, & Taylor, 1989; Taylor, Agras, Losch, Plante, & Burnett, 1991), depression (Selmi, Klein, Greist, Sorrell, & Erdman, 1990), panic disorders (Carr, Ghosh, & Marks, 1988;

Chandler, Burck, Sampson, & Wray, 1988) as well as alcohol and drug abuse (Moncher et al., 1985). However surprisingly few studies examined the use of these exclusively computer-based interventions (Taylor & Luce, 2003). Kaltenthaler et al. (2002) systematically reviewed 16 studies (including 11 randomized controlled trials) of computer-based behavioral therapy for depression and anxiety. These studies varied strongly in terms of design, design quality, size, sample characteristics, treatment program (content, number and length of sessions) and outcome measures employed. Kaltenthaler et al. (2002) concluded that while the quality of the reviewed evidence was poor to moderate, computerized CBT may be effective in the treatment of anxiety, depression, and phobias. They proposed that computer-based treatments might be a useful component in a stepped-care program in the form of an option offered to patients as a first-line treatment approach. The major advantage of these treatments is their wide reach and much lower costs than conventional therapies. However, the lack of face-to-face contact with a therapist makes it very easy to disengage. It may be much easier not to keep an appointment with a web-based program than to cancel an appointment with a psychotherapist. Moreover, fully automated programs are based on a limited number of circumstances and responses. This implies that the patient's specific concerns may be disregarded. This may also lessen adherence or limit use of the program. Focusing on PTSD, no stand-alone approach has been developed for treating PTSD so far.

3.2 Computer-augmented psychotherapeutic interventions

Computer technology can also be used to augment therapy, assess problem behavior, monitor patients progress, enhance therapy session, or aid consultation and ongoing contact between treatment providers (Yager, 2001). Adjunctive computer-based approaches can be used to deliver part of the treatment, thereby decreasing the total required number of therapist contact hours. Newman, Kenardy, Herman, and Taylor (1997) used palmtop computer as an adjunct to a brief, four-session CBT intervention for panic disorders. They compared the computer-augmented condition with a conventional 12-session CBT. It emerged that the shortterm treatment combined with the palm-top was as effective as the standard treatment. Psychotherapists may also employ email contact as an adjunct to psychotherapy. To date only qualitative evidence of the clinical utility of added email contact exists.

Yager (2001, 2003) discussed several important benefits of adjunctive email. He treated *N*= 20 patients suffering from anorexia nervosa. Yager found that email enhanced patient-therapist contact with regard to the patients' perception of increased access to the therapist. He also observed increased adherence in self-monitoring. A rather recent development is the use of virtual reality techniques in the therapeutic process. This is an especially interesting development because the computer application may offer things conventional therapy cannot. The main feature of virtual reality – the ability to give users the impression that they are somewhere else – can be of great value in psychotherapeutic and medical settings (Hoffman et al., 2004). In virtual reality participants wear a helmet attached to stereo earphones and goggles displaying 3-dimensional images. The helmet is connected to a tracking system providing information about the location, orientation and movements of the participant's head. What the user sees and hears responds to the user's body movements. A recent review of Krijn et al. (2004) showed that to date virtual reality therapy has been used most effectively with phobias such as fear of heights (Emmelkamp et al, 2002; Krijn et al., 2004) and fear of flying in airplanes (Mühlberger, Wiedemann, & Pauli, 2003; Rothbaum, Hodges, Anderson, Price, & Smith, 2002). Positive results were also found for claustrophobia (Botella, Banos, Villa, Perpina, & Garcia-Palacios, 2000), arachnophobia (Garcia-Palacios, Hoffman, Carlin, Furness, & Botella, 2002), and fear of public speaking (Harris, Kemmerling, & North, 2002). In addition, virtual reality programs were developed for eating disorders, sexual dysfunction, attention deficit disorder, schizophrenia, addictions and distraction from pain.

3.2.1 PTSD and computer-augmented psychotherapeutic interventions

Focusing on PTSD, only two approaches utilizing virtual reality have been published so far. Difede and Hoffman (2002) describe a case study of a survivor of the World Trade Centre attack who developed an acute PTSD but failed to benefit from conventional imaginal exposure therapy. The patient was gradually and systematically exposed "to virtual planes flying over the World Trade Center, jets crashing in the towers with animated explosions and sound effects, virtual people jumping to their deaths from the burning building, towers collapsing, and dust clouds." Over the course of six one-hour exposure therapy sessions a marked reduction in PTSD (90%) and in depression (83%)

were observed. Similar evidence was found in a study involving the use of virtual reality in the treatment of Vietnam veterans (Rothbaum et al., 2001). In their study 16 Vietnam veterans diagnosed with PTSD were exposed to 8-16 sessions virtual therapy in combination with imaginary techniques and relaxation. Virtual reality included combat situations such as flying in a virtual helicopter over rice paddies or walking through a virtual jungle clearing. Six participants dropped out during treatment and one participant dropped out at posttest (in total 30%). All participants sowed severe psychopathology at pretest and comorbidity with depression. All participants reported reduction in PTSD symptoms from 15% to 67%. On average their PTSD symptoms improved from severe to moderate and their depressive symptoms from moderate to mild. The advantage of this virtual reality technique is the ability to fine-tune gradual exposure. Virtual reality allows exposure to stimuli which are difficult or very costly to arrange. It provides also a treatment alternative for those having difficulties imagining detailed and accurate stimuli. Possible disadvantages may be that in some cases the virtual environment may not match the patient's idiosyncratic fear. For some people virtual reality does not feel real enough to elicit anxiety (Anderson, Jacobs, & Rothbaum, 2004). Other potential disadvantages which have to be considered involve technology-related side effects such as cybersickness and aftereffects. Cybersickness is a variation of motion sickness and is thought to occur when there is a conflict between perceptions in different sense modalities (Anderson, Jacobs, & Rothbaum, 2004). Aftereffects include symptoms such as disturbed locomotion, changes in postural control, perceptual-motor disturbances, drowsiness, and fatigue (DiZio & Lackner, 1992; Kennedy & Stanney, 1996). However, although virtual reality is a promising technique, more empirical studies of effectiveness need to be conducted.

3.3 Internet-based psychotherapeutic interventions

Improvements in internet technologies, paired with the dramatic drop in the cost of getting online, and recent advance in access have created the potential to unite health care providers with patients in an exceptional manner. In the past decade, online-based therapies have been developed for a wide variety of clinical disorders. In contrast to the static modality of computer-assisted psychotherapy, internet-based treatments enable the individual care and the application and monitoring of skill sets designed to promote mastery in vivo (see Taylor & Luce, 2003). The

majority of online therapy to date has taken place via email. Email is text-based and "asynchronous", meaning that communication does not take place in "real time". However, as high-speed internet connections become more widespread, an increasing number of therapists are offering videoconference sessions. A number of studies examined the efficacy of online therapy. Most studies evaluated whether online therapy interventions lead to overall clinical improvement in comparison to waiting list control groups. In general, the results of these studies have yielded relatively consistent and promising results. An overview of the efficacy of internet-based approaches for a variety of clinical disorders is provided in chapter five.

3.3.1 PTSD and internet-based psychotherapeutic interventions

In a pilot study, Morland, Pierce, and Wong (2004) randomly assigned *N*= 17 Vietnam veteran patients to an eight-week videoconferencing PTSD coping skills group or a conventional face-to-face PTSD coping skills group. In such an approach therapist and patient may be at very different locations but see each other via a screen. At post-treatment 11% dropped out from the videoconference whereas 50% dropped out from the traditional treatment approach. No differences emerged with regard to patient or clinician satisfaction. Unfortunately, no data concerning the efficacy of this intervention was provided. The authors concluded that video conferencing could be used to provide coping skills for group of patients who live in remote areas. Very little empirical evidence exists concerning the efficacy of video-based approaches. It is also not clear to what extent the therapeutic relationship differs from face-to-face contact with respect to exclusively text-based interventions. Litz, Williams, Wang, Bryant, and Engel (2004) designed a therapist-assisted internet self-help program for traumatic stress. They included a modified version of stress inoculation training supplemented by daily homework assignments which were completed in vivo. They provided initial face-to-face contact and when necessary email or telephone contact. The authors maintain that they use fewer therapist resources than standard face-to-face therapy. Furthermore, this program could be used to reach a large number of patients when therapist resources are limited (e.g. during a disaster or mass violence). This approach implies considerable overlap with the stand-alone treatment packages. To date this program has not been fully evaluated.

3.3.1.1 Interapy

One of the first who discovered the potential of internet-based interventions for PTSD was Alfred Lange and his colleagues (Lange et al., 2000) at the University of Amsterdam. In the ninties they developed an internet-based cognitive behavioral treatment for posttraumatic stress. The theoretical base of Interapy was provided by experimental research regarding the efficacy of structured writing therapies on mental and physical health. Over the past 20 years, increasing attention has been devoted to the written disclosure procedure developed by Pennebaker and his colleagues and its effects on physical and psychological health (Berry & Pennebaker, 1993; Harber & Pennebaker, 1992; Hughes & O'Heeron, 1987; Murray, Lamnin, & Carver, 1989; Pennebaker, 1993; Pennebaker, Pennebaker, Kiecolt-Glaser, & Glaser, 1988; Pennebaker & Klihr-Beall, 1986; Petrie, Booth, Pennebaker, Davison, & Thomas, 1995). In these studies participants wrote about the most stressful or traumatic event of their lives over 4-5 consecutive sessions for typically 15-30 minutes each session. Participants were typically students with mild traumatic experiences. Depending on their conditions, participants were either instructed to write about the traumatic event including emotional details or about a neutral event (e.g. about how they spend their time each day) without any emotional detail. Overall, the written emotional disclosure paradigm has been associated with positive effects on health and mood among healthy college students (Pennebaker et al., 1988), prison inmates (Richards, Beal, Seagal, & Pennebaker, 2000) and individuals suffering from asthma or rheumatoid arthritis (Smyth, Stone, Hurewitz, & Kaell, 1999). In a meta-analysis Smyth (1998) calculated the effect sizes produced by relatively simple writing tasks without feedback in 13 studies and found a mean weighed effect size of $d = .47$.

To evaluate the use of writing assignments in a clinical context, the treatment manual was tailored in such a way so that it was more in accordance with clinical practice than the above named studies. In the „Amsterdam Writing Project" the beneficial effect of different forms of structured writing assignments for PTSD was examined (Schoutrop, Lange, Brosschot, & Everaerd, 1997a,b). Patients received precise instructions about the content of the writing, the manner of writing, the frequency, the amount of time spent, and the location. In total patients attended five face-to-face sessions with the therapist. The therapist guided the writing process via feedback and by adapting his instructions

to the patient's writing. These insights into structured writing therapy served as a conceptual base for a three-phase writing manual (exposure, cognitive restructuring, social sharing) that allows the treatment of PTSD and complicated grief via the internet (www.interapy.nl). The treatment manual and screening procedure is described in detail in chapter 5 and 6.

3.3.1.2 Previous results of Interapy

One uncontrolled (Lange et al., 2000) and two randomized controlled trials have been conducted to evaluate Interapy for the treatment of PTSD (Lange et al., 2001; Lange et al., 2003b). The first study included *N*= 20 undergraduate students who had experienced traumatic life events and showed symptoms of posttraumatic stress. At posttreatment participants showed significant improvements on posttraumatic stress symptoms and psychological functioning. The first randomized control trial included *N*= 30 traumatized undergraduate students. At the beginning of the study no systematic differences were found between the Interapy treatment group and the waiting list condition. At posttreatment assessment, participants in the treatment condition showed a strong reduction of PTSD symptoms with large effect sizes (*d*= 1.50 on avoidance and *d*= 1.99 on intrusions). General psychopathology also decreased significantly (effect sizes for anxiety, depression, and somatization were *d*= 1.23, *d*= 1.28, and *d*= 1.25 respectively). In the control condition, no significant improvement was found. The second randomized control trial included a clinical sample of *N*= 101 patients which replicated the results of the preceding studies (Lange et al., 2003b). Significant improvement on all health-related measures such as depression, anxiety, and physical health was detected. In addition, trauma-related symptoms such as intrusions and avoidance were significantly reduced. A number of potential predictors such as age, gender, time since the trauma, intentionality of trauma, disclosure versus nondisclosure before Interapy, and general psychological functioning were examined (Lange, Schrieken, Van de Ven, and Emmelkamp, 2004). It emerged that patients who had not disclosed their traumatic experience prior to treatment benefited more from the treatment than patients who talked about their experiences prior to treatment (explaining 14% of the variance in PTSD symptoms subsequent to treatment). Another predictor was intentionality of the trauma. Those people who had experienced a man-made disaster (e.g. rape, physical assault) improved more than those people who had been

victims of a natural disaster or had suffered the loss of a beloved one (explaining 19% of the variance). In an earlier study, Lange et al. (2000) found that prior experience with computer was no prerequisite for a successful treatment. The improvement levels of participants with little or no experience with the internet were comparable to the improvement of participants who had extensive experience with the internet.

As mentioned above, most interventions are based on well-established treatment manuals which have been adapted to the internet. The fundamental difference of face-to-face and internet based approaches is the nature of the therapeutic relationship. This will be discussed in chapter five.

4 Therapeutic alliance in psychotherapy

Of considerable relevance to the proponents of computer-assisted treatments is the question whether the decreased centrality of the relationship between patient and therapist diminishes or endangers the therapeutic outcome – and if so, for whom (Newman, Erickson, Przeworski, & Dzus, 2003). To understand the unique features and challenges of the online therapeutic contact, the therapeutic alliance in face-to-face therapy will be discussed first.

The significance of the "therapeutic relationship", "therapeutic alliance" or "working alliance" in conventional psychotherapy has long been acknowledged; first in clinical practice and theory and later in a vast amount of empirical studies (for reviews see Horvath & Symonds, 1991; Orlinsky, Grawe, & Parks, 1994). Much has been written about what is meant by therapeutic alliance, primarily from the psychoanalytic tradition (for a review see Gelso & Carter, 1985). Although different concepts have been put forward, Bordin's formulation of the therapeutic alliance has become generally accepted over the years (Safran & Wallner, 1991). Bordin (1979) reconceptualized the psychoanalytic notion of alliance to encompass all change-inducing relationships. He identified three interdependent constituent components that, when combined, define the quality of all of the alliances. The first component refers to the agreement between patient and therapist relating to the tasks or specific interventions of treatment. The second concerns their agreement on the goals of treatment or the general outcome that is being sought. The third component refers to the affective bond between patient and therapist that involves a complex network of mutual trust, acceptance, and confidence. Thus, the therapeutic alliance and therapeutic techniques are not separate domains, but rather integrated aspects of a single process. This formulation, originally developed for analytic oriented therapy, also fits the concept of the interaction between relationship factors and treatment techniques in cognitive-behavior therapy.

Empirical evidence has shown that ratings for the therapeutic alliance predict significant outcome variance across different treatment approaches, such as psychodynamic-interpersonal approaches (Raue, Goldfried, & Barkham, 1997), cognitive approaches (Castonguay, Goldfried, Wiser, Raue, & Hayes, 1996; Gaston, Thompson, Gallagher,

Cournoyer, & Gagnon, 1998; Krupnick et al., 1996; Safran & Wallner, 1991) cognitive-behavioral approaches (Blaauw & Emmelkamp, 1994; Keijsers, Schaap, Hoogduin, & Peters, 1991; Klein et al., 2003; Raue, Goldfried, & Barkham, 1997), pharmaco therapy (Krupnick et al., 1996; Weiss, Gaston, Propst, Wisebord, & Zicherman, 1997) and across clinical populations. In a recent meta-analysis of 79 studies, Martin, Garske, & Davis (2000) found that the overall weighted alliance-outcome evaluation was $r = .22$. After establishing the relevance of the therapeutic relationship to the outcome, researchers examined the developmental process of the therapeutic alliance more closely. Kivlighan and Shaughnessy (2000) showed that alliances with "tears-and-repairs" were better predictors of a positive therapy outcome than those that were stable or grew linearly. The finding underscores the importance of examining both the strength (level) and pattern of development when reviewing the effects of the working alliance. It was also repeatedly shown that ratings for the therapeutic alliance at early stages of treatment are more predictive of the outcome than ratings taken later in the treatment process (Horvath, 1994; Martin, Garske, & Davis, 2000). Finally, it was found that patients' ratings of the therapeutic alliance are more strongly associated with the outcome than therapists' ratings (Horvath, & Symonds, 1991; Mallingkrodt, 1996; Orlinsky, Grawe, & Parks, 1994).

4.1 Therapeutic alliance in cognitive behavior therapy

Initially, proponents of CBT challenged the assumption that the therapeutic relationship is crucial to therapeutic success (Krasner, 1962; Sweet, 1984; Wilson & Evans, 1977). They emphasized that the role of techniques was more important than relationship in therapy. In the last two decades, however, there has been a notable shift. Increasingly, cognitive-behavioral therapists have also come to stress the significance of the therapeutic relationship and to outline theoretical recommendations for incorporating the use of the therapeutic relationship into CBT in a systematic fashion. It has been argued that the alliance creates an environment of safety and trust, providing necessary conditions to learn, implement, and practice the techniques that are ultimately responsible for therapeutic change. Thus, the therapeutic alliance was not seen as a therapeutic agent in and of itself but as the context in which techniques gain meaning and effectiveness (Safran, 1990). In CBT the therapeutic alliance is aiming at a

collaborative relationship between therapist and patient. This is thought to be achieved by a high degree of transparency regarding therapeutic procedures, encouragement of questions and doubts, instructions, frequent positive feedback, creating hope, and the stimulation of positive expectations. The three core conditions of the patient-centered approach – empathy, unconditional attention and congruence – are thought to be necessary but not sufficient for the establishment of a stable alliance. According to Grawe (1992) a complementary and differential pattern of therapist responding is essential for building a stable rapport. Although the importance of the therapeutic alliance in CBT is by now generally accepted relatively few empirical studies have explicitly examined the nature and the relevance of the therapeutic alliance in CBT.

4.1.1 Empirical evidence of the therapeutic alliance in CBT

In a large-scale study, the Sheffield Psychotherapy Project, Stiles, Agnew-Davies, Hardy, Barkham, and Shapiro (1998) examined the role of the therapeutic relationship with regard to the therapeutic outcome. They compared cognitive and psychodynamic-interpersonal therapy in *N*= 79 depressed patients. They found a significant association of the therapeutic alliance with the outcome in both treatments. Furthermore, they found a significantly stronger association of the therapeutic alliance with the outcome in cognitive therapy. In the National Institute of Mental Health (NIMH) Collaborative Depression Study, Krupnick et al. (1996) investigated the relevance of the therapeutic alliance to the outcome in CBT, interpersonal therapy, antidepressant medication with clinical management and placebo medication with clinical management. The therapeutic alliance was rated based on videotapes of early, middle, and late therapy sessions for 225 cases (619 sessions). Therapeutic alliance was found to have a significant effect on the clinical outcome for both psychotherapies and for active and placebo pharmacotherapy. Furthermore, they found that alliance accounted for more of the variance in the outcome than the specific treatment approach. Similarly, Castonguay, Goldfried, Wiser, Raue, and Hayes (1996) studied the relative impact of technical factors and therapeutic alliance in cognitive therapy for depression. They found a positive association between the therapeutic alliance measured between the 4th and 7th session and the subsequent therapy outcome. This was in contrast with technical

interventions (e.g. focusing on distorted cognitions) which were found to be negatively related to the outcome.

To examine the quality of the therapeutic alliance Raue, Goldfried, and Barkham (1997) compared alliance ratings in psychodynamic-interpersonal therapy and cognitive therapy of *N*= 57 people being treated for depression. They found significantly higher alliance scores in CBT. The authors attributed this finding to the fact that a basic principle of the psychoanalytic-interpersonal approach is to view strains in the alliance (e.g. transference) as necessary for resolving patient difficulties. This stands in marked contrast with CBT where basic aspects are the explicit clarification of therapeutic goals and tasks and a high degree of transparency concerning therapeutic strategies.

In spite of these findings the therapeutic effect of the alliance CBT has remained controversial. A question remains with regard to the temporal sequence in the formation of the alliance - whether the alliance has a causal impact on the outcome or whether the association runs in the opposite direction, with a change in symptoms influencing the alliance (Feeley, DeRubeis, & Gelfand, 1999). Thus, early change may be a confounding third variable that accounts for the relationship between the alliance and later in depressive symptoms prior to assessment of the alliance. DeRubeis and Feeley (1990) examined the therapeutic alliance of *N*= 25 patients in a highly structured therapy for depression. They failed to find significant associations between the alliance measured at the 2nd session and subsequent change during the course of cognitive therapy. In a later study by Feeley, DeRubeis, and Gelfand (1999) with *N*= 32 depressed patients, the authors used a temporal analysis to analyze the relation between therapeutic alliance and the outcome. Again, they failed to find a predictive quality of the working alliance. A number of studies using a similar design but larger samples found inconsistent results, thereby leaving the relevance of these findings unclear. Barber, Connolly, Crits-Christoph, Gladis, and Siqueland (2000) reported that in a sample of *N*= 88 patients with depressive, anxiety and/or personality disorder treated with psychodynamic psychotherapy, the alliance predicted subsequent change in symptoms even after controlling for prior improvement. This finding was replicated by a large-scale study of Klein et al. (2003) who examined *N*= 367 chronically depressed patients who received cognitive-behavioral treatment. They found that the early alliance significantly

predicted the treatment outcome after controlling for prior improvement. In contrast, neither early level nor change in symptoms predicted the subsequent course of the alliance. The discrepancies between these findings have not yet been fully understood. One explanation for the divergence might be the relatively small sample sizes of the earlier studies providing insufficient statistical power. The issue of reciprocal effects warrants further attention in the future and requires more frequent assessments of the alliance during the course of treatment.

In summary, research revealed that the therapeutic alliance relates significantly to the CBT outcome, and its contribution to the outcome may surpass that of unique or specific treatment factors. However, to date only a small amount of research has been conducted on the alliance in CBT and we still lack understanding of the unique nature of the alliance in CBT.

5 Online therapy: Efficacy and characteristics of the therapeutic relationship

A few years ago most experts dismissed the notion of computer-based psychotherapy as an Orwellian dystopia. However with the emergence of the internet as a mass communications medium this once seemingly futuristic scenario has become reality: a broad spectrum of internet-based psychological information ranging from consultation to therapy has become available. In spite of the scepticism and the continuing controversy surrounding computer-based psychotherapy among clinical experts (Baur, 2000; Griffiths, 2001; Maheu & Gordon, 2000) it appears to be becoming increasingly accepted (Norcross, Hedges, & Prochaske, 2002). Experts concerned about this development point to the lack of research on online therapeutic relationships (Cook & Doyle, 2002). They are worried that the therapeutic relationship, regarded as a crucial factor in the therapeutic process, is becoming impersonal, unstable, low-intensity, and uncontrollable.

In the last two decades the therapeutic relationship has become an increasingly important component of psychotherapeutic research. Nowadays the therapeutic relationship (working alliance) within the framework of face-to-face therapy and traditional therapy has become an accepted element of successful therapy (Gelso & Carter, 1985; Horvath & Symonds, 1991; Martin, Garske, & Davis, 2000). For this reason it is appropriate to pose the following research questions: what characterizes the therapeutic relationship on the internet? Which factors influence the therapeutic relationship on the internet? Does the therapeutic relationship on the internet play a similarly essential role in successful therapy? In the following chapter the therapeutic relationship on the internet is defined as ongoing, interactive, text-based and asynchronous communication between the patient and the therapist aiming at improving the psychological health of the patient (Alleman, 2002). Such a form represents the most frequently employed method of communication with internet-based therapy. This paper will summarize briefly the results concerning the effectiveness of internet-based therapy before portraying the initial results and tendencies that aid in understanding the therapeutic relationship. In addition, certain aspects of online therapy will be examined which seem to be especially

deserving of attention and which possibly have an advantage over face to face therapy.

5.1 Example of online therapy (Interapy)

The following portrayal of internet-based therapy for post-traumatic stress disorders (Interapy) should aid in clarifying online-therapy. Interapy is a cognitive-behavioural orientated, manual-based writing therapy (Lange et al., 2003b). The patients write about their traumata with the aid of instructions and individual replies from their therapists. At no stage of the therapeutic process do the patients and therapists have any direct personal contact with each other. To participate in therapy potential patients are required to complete several questionnaires which are then used to determine whether internet-based therapy is appropriate. Numerous exclusion criteria are involved in this.

In contrast to face-to-face therapy, a diagnosis is not allowed to be made over the internet. The exploration phase is restricted to the selection and evaluation of the aforementioned questionnaires. Upon gaining admittance to therapy patients sign a declaration of consent containing their address and telephone number. Therapy takes place over a period of five weeks during which time patients write ten texts about their traumata. The patients draw up individual time plans for the writing sessions and receive within a working day manual-based, individual replies. Lange et al. (2002) provide a comprehensive description of a therapy manual for post-traumatic stress disorders.

5.2 The effectiveness of online therapy

In spite of an increase in therapy available on the internet in the last two years, the amount of scientific research on the effectiveness of internet-based therapy remains small (Laszig & Eichenberg, 2003). The available data on computer-based therapy does however show numerous positive effects. A high success rate has been attained especially for disorder-specific therapies like fear or eating disorders (see table 1). It should be noted here that cognitive-behavioural methods based on clinically proven therapy manuals are being more frequently employed.

Scientific proof of the effectiveness of online therapy could be attained in the treatment of anxiety disorders (Cohen & Kerr, 1998), headaches (Ström, Pettersson, & Andersson, 2000), in the reduction of risk factors for eating disorders (Celio, Winzelberg, & Wilfley, 2000), post-traumatic stress disorders (Lange et al., 2003b), panic disorders (Carlbring, Ekselius, & Andersson, 2003; Carlbring, Westling, Ljungstrand, Ekselius, & Andersson, 2001; Kenardy, et al., 2003; Klein & Richards, 2002), complaints arising from tinnitus (Andersson, Strömgren, Ström, & Lytkens, 2002), burn-out-syndrome (Lange, Van de Ven, Schrieken, & Smit, 2003a), psychological complaints arising from the diagnosis of breast cancer (Winzelberg, 2003) as well as obesity (Tate, Jackvony, & Wing, 2003). Table 2 provides an overview of internet-based randomized control trials.

Table 2: Overview of empirically tested internet-based interventions.

Study	**Symptoms/Disorder**	**Sample and sample size**	**Therapy conditions**	**Results**	**Effectsizes *d***
Cohen & Kerr (1998)	Anxiety disorders	Nonclinical sample; Internet treatment group (n=12), Treatment group f2f (n=12),	Internet counseling (one-off chat) vs. face-to-face-counseling	Significant reduction of anxiety in both groups; No significant difference between both groups Pre-Post-measurement	Anxiety: 0.14
Ström et al. (2000)	Headache	Patients with headache; Internet treatment group (n=51), WLC (n=51)	Relaxation training & problem solving approach (email) vs. WLC duration of treatment: 6 weeks	Significant less frequent and less intense headaches in the treatment group compared to WLC; 1-month follow-up	Intensity of headaches: 0.14 Frequency of headaches: 0.21 Depression: 0.14
Celio et al. (2000)	Reduction of risk factors for eating disorders	Subclinical sample; Internet treatment group (n=25), f2f (n=26), WLC (n=26)	Internet-based psychoeducative & cognitive behavioral interventions vs. class-room psychoeducative & cognitive behavioral interventions vs. WLC duration of treatment: 8 weeks	Significant reduction of dysfunctional eating habits in both treatment groups compared to the WLC; no significant difference between both groups; 4- month follow-up	Worries about weight: 0.63
Carlbring et al. (2001)	Panic disorders	Patients with panic disorder; Internet treatment group and WLC in total (n=41)	Internet-based cognitive behavioral self-help with breathing training and minimal therapist contact vs. WLC duration of treatment: 7-12 weeks	Significant reduction of panic symptoms, anxiety and depression in the treatment group compared to the WLC; Pre-Post-measurement	Bodily sensations: 1.44 Agoraphobic thoughts: 1.06
Carlbring, Ekselius, & Andersson (2003)	Panic disorders	Patients with panic disorder; Internet treatment group (n=11), relaxation (n=11), no CG	Internet-based cognitive behavioral self-help with minimal therapist contact vs. relaxation duration of treatment: not defined	Significant reduction of panic symptoms; no significant differencdes between both groups; Pre-Post-measurement	Panic symptoms: Bodily sensations: 0.15 Agoraphobic cognitions: 0.19

Study	Symptoms/Disorder	Sample and sample size	Therapy conditions	Results	Effectsizes *d*
Kenardy et al. (2003)	Panic disorders	Patients with panic disorder; 3 treatment groups: 12 weeks f2f (n=45), 6 weeks f2f (n=45), 6 weeks computer-based (n=41), WLC (n=46)	Internet-based vs. f2f cognitive behavioral interventions vs. WLC duration of treatment: 6 weeks & 12 weeks	Significant improvements in all treatment groups compared to the WLC; 6-month follow-up	Panic symptoms: 1.96
Lange et al. (2003a)	Burn-out-Syndrom (Work-related Stress)	Subclinical sample; Internet treatment group (n=62), WLC (n=34)	Internet-based cognitive behavioral interventions vs. WLC duration of treatment: 7 weeks	Significant reduction of depression, anxiety and exhaustion in the treatment group compared to the WLC; 6-weeks follow-up	Exhaustion: 0.60 Stress: 1.22 Cynism: 0.26 Feeling of competence: 0.39
Lange et al. (2003b)	Posttraumatic Stress Disorder	Patients and students with posttraumatic stress; Internet treatment group (n=69), WLC (n=32)	Cognitive behavioral writing assignments vs. WLC duration of treatment: 5 weeks	Significant reduction of post-traumatic stress and general psychopathology in the treatment group compared to the WLC; 6-week follow-up	Intrusions: 1.28 Avoidance: 1.39
Tate, Jackvony, & Wing, (2003)	Obesity	Obese patients with risk of Diabetis II; Internet treatment group (n=46), Internet treatment group with indiv.email counseling (n=46),	Behavioral, educative Internet program & email duration of treatment: 1 year	Significant stronger weight reduction in treatment group with email counselling; Pre-Post-measurement	Weight reduction in the treatment group including email counseling compared to exclusively internet treatment: 0.48
Winzelberg et al. (2003)	Psychological stress after diagnosis of breast cancer	Clinical sample; Internet treatment group (n=36), CG (n=36)	Structured and therapist-guided internet-based group therapy vs. WLC duration of treatment: 12 weeks	Significant reduction of depression, stress and cancer-related posttraumatic stress of the treatment group compared to the WLC; Pre-Post-measurement	Depressive symptoms: 0.54 Post-traumatic stress: 0.48 Stress: 0.38

CG = control group, WLC = Waiting list control group f2f = face-to-face

A large number of the aforementioned studies showed that online therapy was superior to the control group. A weakness of many of the studies is the use of relatively small subclinical or student samples. This is detrimental to the generalizability of the results. It is also unclear to what extent online therapy is comparable to face-to-face therapy. Apart from the study carried out by Cohen and Kerr (1998) there have not been any direct comparison studies to date. Consequently, ascertaining the effectiveness of online therapy has proven difficult. Research into the long-term effects of internet-based therapy also remains negligible. Accordingly, the effectiveness of online therapy remains at this point in time provisional in spite of encouraging initial results.

5.3 Classification of online therapy and the internet-based therapeutic relationship

The introduction and application of new communications media in psychotherapeutic practices should not be confused with the introduction of new theoretical methods. The therapies available online are essentially derivations of proven traditional therapies that have been adapted specifically for the internet. The most important difference between online therapy and traditional therapy is the physical absence of the therapist in the former. This is why in the discussion on internet-based therapy the quality of the therapeutic relationship is of considerable significance. An important question on this matter seems to be whether theories concerning the quality and development of the traditional therapeutic relationship can be applied to its internet-based derivation or whether new theories are needed to adequately describe the online therapeutic relationship.

An examination of the online therapeutic relationship needs to take into account - just as in traditional therapy - the various psychological treatment methods (Grohol, 1999; Maheu & Gordon, 2000). Thus one can find on the internet a multitude of sites offering (self-) help on a great many themes. Numerous social and religious organisations like the “Telefonseelensorge” or the “Profamilia e.V.” provide on the internet information, advice, and crisis help. With regard to the therapeutic relationship one should differentiate between these online help agencies and online therapy. Online consultation involves answers to one-off questions or infrequent contact in which case the therapist

works along psychoeducative lines, i.e. he/she offers specific information on specific questions (Manhal-Baugus, 2001).

In such circumstances the therapeutic relationship is of little relevance. Online therapy however involves regular, long-term therapeutic contact within a framework which enables the treatment of complex psychopathological problems. This is why the discussion on the internet-based therapeutic relationship is confined to individual online therapy offers and not consultation offers or online therapy which only complements face-to-face therapy.

According to Gelso and Carter (1985, p. 159) the therapeutic relationship consists of "all those feelings which the patient and the therapist have for one another and the way in which these feelings are expressed". This definition is useful in the sense that it includes the techniques and procedures of different therapy methods, thereby integrating both online based methods as well as theories which form the basis of these methods.

Therapeutic contact on the internet is strongly influenced by so called setting-parameters (e.g. synchrony/ asynchrony of communication). There are different types of communication on the internet. Besides email which is similar to traditional letter writing, there is also the intern relay chat which enables several people in virtual space protected by password security to communicate simultaneously with each other. In contrast to email this type of communication comes close to a direct conversation. Recent improvements in communication technology (i.e. online video conferences) have made it possible to communicate face-to-face in real time. As mentioned in the introduction the following discussion on the therapeutic relationship is restricted to ongoing, time-delayed, text-based contact between the patient and the therapist.

5.4 Characteristics of the therapeutic relationship in online therapy

The therapeutic relationship on the internet is influenced by the prevailing conditions of communication. These involve a restriction of communication canals, possible distortion effects, as well as a possible disinhibition effect.

Characteristic for online communication is the near complete absence of sensory contact, i.e. the absence of a physical presence, the lack of social and nonverbal signals like eye contact, body language, and vocal intonation. The text appearing on the computer screen is the sole interface between the therapist and the patient. The tension body language reveals, anxiety, exhaustion, i.e. signals that either confirm or contradict verbal information supplied by the patient are hidden by the computer screen.

The difficulties in reacting immediately to the nonverbal signals of the patient can in turn cause difficulties in noticing and correcting such distortion effects as misunderstandings or irritability that the patient may have. One way of combating this problem is for the therapist to adopt and to frequently summarize the compositional style and expression of the patient. This entails a more exact recording of verbal reactions. A dismissal of online communication as inferior to other types of communication would in any case be premature. It has been shown that patients compensate the lack of nonverbal communication by employing internet-specific techniques like varying the font or computer screen background (Fenichel, 2002), or putting important emotional information into brackets (Murphy & Mitchell, 1998). An insufficiently defined modus of contact can lead to communication problems. To avoid these the frequency of communication (regularity of contact, size of text, time of response) should be determined and observed by the therapist and if possible the patient.

Using individual case descriptions, Lindner & Fiedler (2002) concluded that people involved in relationships on the internet often tend to become either idealized or devalued by their communication partners: “ [internet relationships] enable people to express themselves uninhibitedly regardless of the physical distance to the communication partner while at the same time being exempt from any form of control of communication.”

One can also regard the absence of audio-visual information as possibly being a cause for more intensive exchanges between communication partners. Walther (1996) provided an approach to describe and explain behavioural communication with his theory of the hyperpersonal. He maintained that the absence of the physical presence of the communication partner and the asynchronous nature of the

communication lead to comparatively more anonymity. According to Walther's theory this can result in the mutual idealization of the communication partners, as well as a generally more positive and intimate exchange of information. To date there is hardly any empirical evidence in this field.

5.4.1 Changes for patients

At the same time the lack of direct contact may be of therapeutic use. The anonymity of the participants seems to produce in general a higher degree of openness, sincerity, and intimacy (Walther, 1996). Suler (2001b) call this phenomenon a disinhibition effect, thereby implying that it entails a reduction in the feelings of shame. Thus patients are able to "get to the point" more quickly. Social barriers (e.g. due to physical attributes) are irrelevant. Patients have access to an uncharted terrain of types of self-expression (s. Döring, 2000, p.380.)

Of interest here is the shift in traditional "distribution of power" which occurs in online therapy (Wright, 2002). In contrast to traditional therapy the flow of information between therapist and patient depends far more on the extent to which the therapy participants are prepared to and able to express their emotional states textually. Online therapy requires from the patient more active participation in the therapeutic process. The patient is able to determine and modify the initial contact along with any further contact, as well as being able to structure of the interpersonal relationship (Eidenbenz, 2003). Writing also ensures a high degree of freedom concerning the choice of topic, its ensuing development, and what part of the topic is emphasised (Cohen & Kerr, 1998). The patient decides on the speed and the intensity with which he would to like work. Consequently, the distribution of power in therapeutic relationship becomes more evenly spread (Murphy & Mitchell, 1998; Cohen & Kerr, 1998). A difficulty arising from this kind of self-determination is presented by the possibility of the patient simply avoiding contact with the therapist. The failure of a patient to respond or to complete an assignment can of course be due to technical difficulties. A modus of contact worked out before the beginning of therapy is decisive in maintaining continuity and reliability. This could mean that after a certain period of time during which the patient has not responded the therapist attempts to contact him by telephone. Just as in face-to-face contact it is important in such a case not to be

confrontational when seeking to determine the patient's reasons for not responding. The psychoeducation of the patient relating to the phenomenon of "avoidance" during the therapeutic process and the emphasis on and strengthening of self-responsibility are ways of combating this problem. According to Allemann (2002) the main challenge for internet-based therapy lies in the recognition of the patient's self-determining control over the degree of his honesty and openness.

5.4.2 Changes for therapists

A discussion on the therapeutic relationship must of course include the perspectives of the therapist. In this respect the asynchronous or time-delayed nature of online communication during online therapy is useful as the both the patient as well as therapist are able to think about the correspondence and are not forced as in a therapeutic session to reply immediately (Grohol, 1999). Textual responses can be discussed in advance with colleagues as well as being able to be carefully written. The supervisor is able to follow the entire therapeutic process by referring to the correspondence. This allows increased scope to respond as well as ensuring the thoroughness of the supervision. Moreover the therapist can regulate his interaction with the patient's texts i.e. decide when he reads them or when takes a break.

Dijk und Verkuil (2000) looked into the therapeutic online relationship from the perspective of the therapist during a study on internet-based therapy involving patients suffering posttraumatic stress disorders (Interapy). The treatment of these disorders places the therapist under an exceptionally high amount of emotional pressure (Maercker, 2003). Applying the concept of secondary traumatization Dijk und Verkuil (2000) investigated to what extent the therapists (n= 12) who had treated traumatized patients over the internet developed emotional problems themselves. More than half of the therapists admitted that they felt emotionally involved with their patients. Many described emotional reactions like concern or empathy. This indicates that online therapy and treatment does not hinder the therapist from forming an emotional bond with the patient.

Schauben und Frazier (1995) showed in their study on secondary traumatization of psychological consultants that many of those

surveyed found it difficult listening to descriptions of traumatic experiences (expositions) and inquiring about details, whereas three quarters of the therapists who used the internet as the main tool of communication with their patients did not report such difficulties. Due to the digital nature of the contact the therapists did not feel any kind of emotional strain that results from nonverbal contact. Moreover, they considered it to be an advantage that the patients could express themselves uninhibitedly thanks to the anonymous nature of the treatment. It was shown that these therapists were relatively well-equipped to cope with the adverse effects of treating traumata. This could just be due to the sessions being held regularly. It could also plausibly due to the effect of the internet which seems to reduce the traumatizing element involved in the patients' narratives. The reliability of these results however is doubtful because of the number of therapists (n= 12) surveyed in this study. Schauben und Frazier's (1995) study was on consultants and not qualified therapists which rules out the possibility of a direct comparison.

In light of the long-term nature of text-based contact, the possibility to read the texts several times over as well as the ambiguous nature inherent in written texts King, Engi and Poulos (1998), drawing on their experiences with internet-based family therapy emphasize that the therapist should appear attentive, friendly and empathetic. The therapist should work primarily with positive reinforcers i.e. the use of supportive, resource-based motivational techniques. The transparency of the therapeutic process and the conceptual framework in which it occurs is vital for the patient. This also involves the recognition and support for the patient's self-determining activity. This applies in similar measure to the therapist's clear, detailed, positive replies, his frequent summaries of the patient's texts and his encouragement of questions and doubts.

5.4.3 Empirical results on the online therapeutic relationship

Within the framework of internet-based treatment of burnout patients, Lange, Van de Ven, Schrieken, & Smit (2003a) asked patients for their opinion on the nature of the therapeutic contact. As table 2 shows, 86% of 115 patients describe the contact with their patients as "personal" and 76% of the patients describe the contact as "pleasant". Eighty percent of the patients regarded the fact that therapeutic contact occurs exclusively

over the internet as positive. A detailed description of this study can be found in Lange, van de Ven, Schrieken, and Smit (2004).

Table 3: Percentage of positive and negative evaluations of the Interapy treatment, Lange et al. (2003a).

Questions	Answers	Percentage
Did you misface-to-face communication with your therapist for example with regard to support and instructions?	No	68%
	Yes	1%
	I don´t know	31%
How did you experience the fact being treated through the internet instead of face-to-face?	Pleasant	76%
	Unpleasant	5%
	I don´t know	19%
What was the contact between you and your therapist like?	Personal	86%
	Impersonal	2%
	I don´t know	12%
How did you experience the fact that you had contact with you counselor exclusively via email?	Pleasant	80%
	Unpleasant	10%
	I don't know	10%

Celio, Winzelberg, and Wilfley (2000) compared internet therapy with face-to-face therapy with a focus on reducing the patient's dissatisfaction with his or her body and eating disorders. The extent of experienced social support was measured using an abbreviated version of a multidimensional social support scale which contained 4 items. Participants of both of the treatment groups reported that they had received a moderate amount of support. Differences concerning the perceived extent of social support between the online group and the face-to-face group could not be established. Although the study did not involve individual therapeutic treatment the data does indicate that supportive and intimate relationships can be formed over the internet. Cohen and Kerr (1998) compared in their study one-off face-to-face therapy with one-off online-based therapy (chat). The sample group consisted of *N*= 22 students who reported anxiety symptoms and was randomly distributed in both of the groups. It was shown here that the expertise, attractiveness, and trustworthiness of the therapist were evaluated independently of the modus of contact. Even when in this case one cannot speak of the development of a therapeutic relationship because of the one-off nature of the contact, this data adds to the evidence that positive and trustworthy contact on the internet is able to be established.

Cook and Doyle (2002) compared the evaluation of the therapeutic relationship of an online sample with a sample of traditional face-to-face therapy using the Working Alliance Inventory (WAI). The WAI (Horvath & Greenberg, 1989) is a pantheoretical instrument which enables different types of therapeutic methods to be compared. It is one of the most frequently used measurement instruments for the assessment of the therapeutic relationship (Horvath & Symonds, 1991). The WAI measures the therapeutic relationship based on the following three subscales: 1) Development of an interpersonal bond, 2) agreement between therapist and patient concerning the tasks involved in the therapy and 3) agreement on the goal of the therapy. The questionnaire contains 36 items (the short-form of the WAI contains 12) which are evaluated on a seven point Likert scale. Table 4 shows that patients who have undergone online therapy generally evaluate the therapeutic relationship and in particular the agreement on therapeutic goals significantly higher than patients who have undergone face-to-face therapy. The effect sizes for the significant *t*-values were *d*=.79 for the goal subscale and *d*=.60 for the composite score. The authors concluded from these results that at least an adequate if not a better therapeutic relationship can be established over the internet. But because of the small sample size of the online group and the non-randomized allocation of the patients these should be interpreted carefully.

Table 4: Means and *t*-test comparisons between online therapy and face-to-face psychotherapy (Cook & Doyle, 2002).

	Sample means		*t*- test
WAI scale	online therapy (*N*= 15)	face-to-face therapy (*N*= 25)	
Agreement on tasks	70.33	68.6	n.s.
Bond	72.47	69.6	n.s.
Agreement on tasks	72.27	67.3	< 0.01
Composite score	215.07	205.5	< 0.05

5.4.4 Areas of application of online therapy

The applicability of online therapy is particularly interesting in circumstances which make traditional face-to-face therapy difficult. Online therapy could be an attractive option for physically disabled people or people who are frequently not at home due to work commitments. People who have a language disability, people who are afraid of the stigmatization connected to visiting a psychotherapeutic

clinic, or people who are geographically isolated could all find an easily accessible alternative in internet-based therapy. Online therapy could also be of use for certain psychological sicknesses like agoraphobia or socially phobic patients who have previously never been able to access psychotherapeutic care.

In a survey from Metanoia (1999), 70% of the approximately *N*= 450 surveyed people who had undergone online therapy said that it was the first time they had had psychotherapeutic contact. Of note here is that nearly 65% of these patients went on to receive face-to-face therapy. This data indicates that online therapy does not necessarily compete with face-to-face therapy as offer an increase in potential patients.

Online therapy allows the patient the possibility of self-exploration and enables him to gain an insight into the process of his development due to the fact that he has ongoing access to the entire therapeutic process in textual form. The writing process promotes self-reflection which is a significant factor in the growing process. The texts can also be used as a kind of “relapse prevention” after the therapy itself is finished (Murphy & Mitchell, 1998). Patients can go back to their own texts as well as the comments and advice of their therapists’ to reinforce the alternatives and new perspectives worked out during therapy. An overview of possible advantages and disadvantages of online therapy is provided in table 5.

Table 5: Advantages and disadvantages of online therapy.

Characteristic	**Advantages**	**Disadvantages**
Anonymity	Openness, Expression (Suler, 1999) Disinhibiting effect	Abuse/ use of false identities Lack of social norms
Suitability	Access for people not able to access therapeutic care due to geographical, physical, financial, psychopathological reasons (Suler, 1999). Low-level psychosocial care also for people with non-clinical symptoms.	Not suitable for people without internet access or who lack computer skills No treatment possibility for people with certain disorders
Textual exchange as sole means of communication	For people who write well Absence of unintended nonverbal behaviour.	No possibility of checking truth of information Potential for misunderstandings Labour-intensive
Asynchronous communication	Possibility of reflection Session flexibility Increased supervision	No possibility of immediate response
Textuality of the therapeutic process	Potential for cognitive restructuring Relapse prevention	Writing inhibitions of therapy participants
Relationship structuring	Possibility to try out different interpersonal relationships Promotion of self-independence Low dependence on therapist	„Decreased experience of interpersonal relations“

5.4.5 Limits of online therapy

Online is not suitable for every patient nor is it appropriate for every kind of therapy. Many people prefer face-to-face contact to computer-based contact. For a considerable number of clinically relevant disorders like personality disorders there is not any data on whether and in which form online therapy is applicable. For this reason it is necessary at this point in time to maintain relatively stringent exclusion criteria for internet-based therapy.

Experts agree that online therapy is not suitable for those patients who tend to dissociate (e.g. in the PTSD-therapy), who have problems with reality testing, who display Borderline symptoms, or who are suicidal or psychotic (Suler, 2001a). Yet these guidelines have not been empirically tested to date and are continually being questioned (Ball, 1995; Bouchard et al., 2000; Zarate et al., 1997). Experts are however unanimous that suicidal people should not be treated over the internet.

In such cases an immediate response is essential and this is usually not possible over the internet.

Internet-based therapy does not seem to be appropriate when the patient continually casts doubt on the value of the therapeutic relationship thereby necessitating an intensive dialogue (Lange, 2003a). An intensive exploration phase is difficult to structure in textual form alone without any direct contact. Consequently, the current array of therapies is restricted to clearly classifiable disorders. This is in line with German law which forbids therapists from making diagnoses over the internet or by telephone. Similar laws exist in other EU countries. The treatment of complex psychopathological disorders over the internet is very difficult. The possibility of nurturing an interpersonal relationship is small. Long-term internet-based therapy would be difficult to carry out particularly with patients lacking in social skills.

Frequently expressed ethical concerns (e.g. making a diagnosis), legal difficulties (e.g. insufficient data protection), and practical matters (e.g. it takes longer to write something than to say it) need to be investigated and taken into account in future when offering therapy online.

5.5 Conclusion

The question whether a new theory of therapy needs to be developed for the therapeutic relationship on the internet is not able to be sufficiently answered due to the current state of research. However the studies that have been discussed here indicate that functioning therapeutic relationships can be established over the internet. Although the therapeutic relationship is virtual it is at the same time real in the sense that physical space and time cannot be equated with the idea of emotional distance. The concern that the therapeutic relationship would be undermined by the use of information and communication media not seem to be justified in light of the reports and empirical studies discussed here. These media however do alter the therapeutic relationship and thereby pose a new challenge for therapists and patients alike. Maintaining an individualized, complementary relationship as Grawe proposed (1992), is presumably only possible to a certain extent because the online therapeutic relationship is seldom as flexible as its face-to-face equivalent. How internet-based therapy

differs from traditional therapy in such specific aspects as transference or the dynamics of identification remains a matter of speculation.

In future we have to devote more research efforts to the quality of the therapeutic relationship in online therapy. Online therapy is no longer just a potential therapy alternative – it is for certain disorders a real option which is becoming increasingly accepted and popular. In a survey of *N*= 1000 individuals from ComCult research (2001) approximately 50% of internet users use the internet to find out about health issues. There is good reason to assume that such a development will effect the demand for internet-based consultation and therapy. Moreover, the progress in computer and internet technology (quicker connection times, high resolution monitors) will probably lead to an increase in the types of therapy available online. Developments like improved audiovisual technology will presumably influence the structuring of internet-based therapeutic relationships. The use of internet-based communications media as a therapeutic supplement within the framework of traditional therapy is also conceivable.

To enhance our knowledge and understanding of online-based therapy it is essential that we undertake further empirical research. Previous studies should be carried out again using larger clinical samples in order to test whether the results also apply to other clinical populations. This would also enable identification and analysis of the specific aspects and dynamics of the online therapeutic relationship. Thus further comparative research into online therapy and face-to-face therapy is necessary. In particular, a more exact analysis of the necessary conditions and limits of online therapy is required. To enable this new measurement instruments need to be developed and the traditional measurement instruments need to be tested for their validity on the internet.

6 Does the quality of the working alliance predict treatment outcome in online therapy for trauma patients?

Recent developments in communication technology have opened up new therapeutic possibilities that challenge our understanding of psychotherapy. While the academic debate continues as to whether online treatments might present an acceptable alternative to face-to-face therapy, real life has already decided. "Researchers can no longer discuss online counselling as an intervention method that will take shape in the future – the future is now" (Mallen, Day, & Green, 2003). Internet-based treatment approaches have already been developed for a wide range of clinical disorders including depression, eating disorders, anxiety disorders, and substance abuse, as have interventions targeting relationship problems, adjustment disorders, and work-related burnout, and the numbers are expected to increase (Norcross, Hedges, & Prochaska, 2002). The numbers of empirical studies investigating the efficacy of online approaches are growing apace, and results indicate that these new treatment alternatives are indeed effective (see Knaevelsrud, Jager, & Maercker, 2004, for a review). Although the efficacy of the treatments has been demonstrated, an important question remains largely unanswered: What contributes to therapeutic change? To date, virtually no studies have focused on the processes underlying online therapy (Rochlen, Zack, & Speyer, 2004). Thus, it is not clear whether online therapy is based on factors and mechanisms similar to those that are responsible for therapeutic change in face-to-face therapy or whether we need to redefine our understanding of the underlying processes when considering online therapy.

The quality of the therapeutic relationship or working alliance has been demonstrated to be especially important in predicting the outcome of psychotherapy. The working alliance has been defined as the extent to which a patient and a therapist work collaboratively and purposefully and connect emotionally (Horvath & Luborsky, 1993). Research reviews have consistently reported a positive relationship between the quality of the therapeutic alliance and therapy outcome across studies, although there are some instances where the working alliance fails to predict outcome or where associations are nonsignificant (Gaston, 1990; Horvath & Greenberg, 1994; Horvath & Luborsky, 1993;

Horvath & Symonds, 1991; Krupnick et al., 1996; Martin, Garske, & Davis, 2000). In their meta-analysis, Martin, Garske, and Davis (2000) reported that the quality of the therapeutic alliance accounted for 22% of the variance in the rate of therapeutic success. Moreover, research has indicated that the relationship between therapeutic alliance and treatment outcome holds across several types of treatment, including cognitive-behavioral therapy (Stiles, Agnew-Davies, Hardy, Barkham, & Shapiro, 1998), interpersonal therapy (Krupnick et al., 1996), and psychodynamic therapy (Horvath & Greenberg, 1994; Stiles et al., 1998) and does not differ significantly within treatment approaches (Horvath & Symonds, 1991; Krupnick et al., 1996). The reported strength of the relation does vary, however, according to the dimensions of the working alliance assessed, outcome measures and perspectives (patient, therapist, or observer) and phase of treatment (early, middle, or late) (Bachelor, 1991; Horvath & Luborsky, 1993; Raue & Goldfried, 1994).

The beneficial effects and clinical relevance of a positive working alliance have been well documented in face-to-face therapies, but almost nothing is known about how the therapeutic relationship operates online. Online therapy challenges our basic assumptions about what is needed to establish a therapeutic contact, such as 1) sharing the same physical space, 2) talking, and 3) synchronous – 'real time' – interaction (Skagerud, 2003), and it is still uncertain if online therapy provides conditions that are sufficient to establish a stable therapeutic alliance at all. Since one of the major criticisms of online therapy concerns the ambiguous nature of the therapeutic relationship, research in this field is needed.

Most previous studies have focused on relational behavior in everyday online contact, with inconsistent results. These findings prompted an academic discussion between proponents of two contrasting views of the online relationship: On the one hand, Slouka (1995) states that online relationships are shallow, impersonal, and unreal. Indeed, Kraut et al. (1998) have demonstrated that online relationships heighten depression and loneliness rather than provide fulfilling relationships. Mallen, Day, and Green (2003) compared internet-based and face-to-face conversations in a randomized study and found that participants who communicated online felt less satisfied with their contact and experienced a lower degree of self-disclosure and closeness with their

partner than participants in the face-to-face group. On the other hand, various other authors have shown that online contacts are just as real and intense as face-to-face relationships, and that differences between online relationships and face-to-face relationships diminish over time (Walter, 1996). Whitty and Gavin (2001) found that the absence of social clues enhanced and encouraged the development of relationships. This is in line with prior research indicating that visual anonymity contributes to higher levels of self-disclosure and openness (Suler, 2004; Utz, 2000).

It should be noted, however, that online therapeutic contact differs markedly from arbitrary, anonymous online contact, the most important difference probably being the identity of the therapist. In online therapeutic contact, the address, telephone number, and credentials of both parties are accessible. Furthermore, the frequency of contact is predefined and there are set time limits for response. Thus, aspects such as uncertainty about the identity and honesty of the other party, which might be detrimental to establishing a trustful contact, are much reduced in online therapeutic relationships compared with anonymous online contacts.

Focusing on the working alliance online, Cook and Doyle (2002) evaluated differences in client ratings of the working alliance between a small sample (N= 15) of online therapy clients and normative data from a comparable face-to-face counseling sample. Cook and Doyle found comparable (and relatively high) evaluations of the working alliance in the online sample using the frequently applied Working Alliance Inventory (Horvath & Greenberg, 1989). Lange, van de Ven, Schrieken, and Smit (2003a) conducted an internet-based treatment study of work-related burnout. After completing the course of treatment, patients where asked to rate the contact with their therapists. 75% of the N= 115 participants described the contact as personal and 88% as pleasant. Eighty percent rated being treated exclusively via the internet as positive and 70% indicated that they did not miss face-to-face contact. Similar results were reported by Knaevelsrud and Maercker (2005). Cohen and Kerr (1998) compared the impact of one session of face-to-face counseling with online counseling (chat) in terms of posttreatment anxiety and attitudes toward counseling. Participants (N= 24) were randomly assigned to the two experimental groups. Clients in both groups experienced a uniform decrease in anxiety and rated their

counselors equally on expertness, attractiveness, and trustworthiness, regardless of the mode of delivery.

While data from the aforementioned studies provide valuable information and preliminary evidence that a positive working alliance can be developed through the internet, empirical data derived from systematic exploration of the online therapeutic relationship remain sparse. Thus, it is essential to investigate whether it is possible to develop a therapeutic alliance in the absence of visual and auditory cues and whether the working alliance has the same predictive value in online treatment as in face-to-face therapy.

The present study aims to replicate prior findings concerning the relationship between the working alliance and treatment outcome in face-to-face therapy. It was hypothesized that the baseline psychopathology would be inversely associated with the patients' assessment of the therapeutic alliance. Furthermore, it was hypothesized that the quality of the online therapeutic alliance would predict the residual gain from pretreatment assessment to end of treatment. We expected the patients' ratings of the alliance to be more highly correlated with therapy outcome than the therapists' ratings, and the patients' and therapists' assessments of the therapeutic alliance to be only moderately related. Overall, we expected that it would be possible to establish a positive and stable therapeutic relationship online, characterized by high scores on the Working Alliance Inventory and low dropout rates.

6.1 Method

6.1.1 Design

The present study is part of a larger study with random assignment to a treatment group and a waiting list control group (Knaevelsrud & Maercker, 2004; Maercker & Knaevelsrud, 2005). Based on the research questions chosen, only the data from the treatment group were used in the following analyses.

6.1.2 Procedure and treatment

Potential patients browsed through the www.interapy.de website, which provided information about a) posttraumatic stress reactions, b) the study and its inclusion criteria, c) the treatment, d) the therapists and supervisors, and e) other treatment alternatives. Potential participants were sent screening questionnaires by email. Those who passed the screening gave written informed consent and randomly assigned to the control or treatment group. Patients who were excluded from the study were provided with information on where they could receive treatment elsewhere.

Treatment.

Patients were set two weekly 45-minute writing assignments over a five-week period (10 essays in total). Before and after the treatment, participants completed a set of questionnaires measuring the treatment effect. The therapy consisted of three treatment phases: 1) self-confrontation, 2) cognitive reconstruction, and 3) social sharing. After the fourth writing session, which constituted the end of the first treatment phase, the Working Alliance Questionnaire was administered. The treatment procedure is described in detail by Lange, Schoutrop, Schrieken, and van de Ven (2002) and will only be outlined in brief here.

First Phase: self-confrontation. At the beginning of the treatment, participants received psychoeducation about the mechanisms of exposure. In the first four essays, they were instructed to describe the traumatic event thoroughly. To increase the effect of the exposure, patients were asked to write in the first person and to give detailed descriptions of all sensory details they had experienced during the traumatic event (e.g., visual and auditory impressions). Participants were explicitly asked not to concentrate on style, grammar, spelling, or the chronological order of their essays.

Second phase: Cognitive restructuring. During the second phase, patients received psychoeducationed about the principles of cognitive restructuring. The goal of this phase was to form a new perspective on the traumatic event. Participants wrote a supportive letter to an imaginary friend who had been through the same experience. In this letter, the patient was instructed to question the addressee's feelings of

guilt and shame and to consider potentially positive consequences of the traumatic event for that person's life.

Third Phase: Social sharing and farewell ritual. During the third phase, patients received psychoeducation about the positive effects of social sharing. In a final letter, they then took symbolic leave of the traumatic event. Patients could address the letter either to themselves, to a close friend, or another significant person involved in the traumatic event. The letter did not ultimately have to be sent.

At the beginning of each writing phase, patients proposed individual timetables as to when they planned to write. Halfway through and at the end of each treatment phase, patients received feedback and further writing instructions, which were based on the treatment manual but tailored to patients' specific needs. Important aspects of this feedback were recognition and reinforcement of the patients' independent work, positive feedback and motivation, as well as frequent summaries and encouraging patients to voice questions and doubts.

6.1.3 Sample

Participants were recruited by means of radio and newspaper advertisements as well as advertisements posted on websites for different groups (e.g., crime victims, sexual abuse victims, bereaved parents). To be included in the study participants had to: 1) have experienced a traumatic event that occurred at least one month prior to treatment and that met the criteria specified in DSM-IV (APA, 1994), 2) be 18 years or older, 3) not exceed the cutoff scores for dissociation and psychosis (see screening criteria in the Assessment session), 4) not abuse alcohol or other drugs, 5) not consume neuroleptics, 6) be fluent in written German, and 7) not be receiving treatment elsewhere.

A total of N= 498 potential participants showed interest in the treatment. 68% (n= 337) returned the screening questionnaires; 73% (n= 246) of them were excluded based on the exclusion criteria. In total, 91 patients participated in this study (n= 48 treatment group; n= 43 control group).

As indicated above, statistical analyses were only performed on the data of the 48 participants of the treatment group. Participants in this group

were aged between 18 and 68 years, with an average age of 35 years; 92% were female; 55% had a university degree, and a further 14% had a secondary school leaving certificate. The most frequently reported traumatic event was the sudden or violent death of a close person (40%); 38% of the patients reported sexual abuse, incest, or rape; 10% were crime victims. On average, the traumatic event had occurred 3.5 years previously (range 2-696 months).

6.1.4 Assessment

Screening criteria

Dissociation. Dissociative symptoms were tapped using the Somatoform Dissociation Questionnaire (SDQ-5; Nijenhuis, Spinhoven, van Dyck, van der Hart, & Vanderlinden, 1997). The scale consists of five items, which are rated on a 5-point Likert scale (1= not at all, 5 = very often). The internal consistency of the SDQ-5 is good (α= .80). Participants who scored above the cutoff score on the SDQ-5 were excluded from the treatment.

Risk of psychosis. Risk of psychosis was measured using the Dutch Screening Device for Psychotic Disorder (Lange, Schrieken, Blankers, van de Ven, & Slot, 2000). This seven-item inventory has high internal consistency (α= .82) and is a good predictor of psychotic episodes. In a Dutch study, a high level of agreement was found between the self-reports of 33 patients and their clinicians' reports on them (α= .85). Since no German norm group exists as yet, the data from the Dutch norm group were used. Participants were excluded if they scored above the cutoff score. Participants were also excluded if they indicated the use of neuroleptics.

Biographical information. To gather miscellaneous information, including the time since the trauma, educational level, degree of computer and internet experience, and typing skills a short checklist was administered.

Suicidal intentions. Risk of suicide was measured using the Suicide Risk Assessment (SRT; Arnoldi, van de Ven, Schrieken, & Lange, 2000), a six-item self-report questionnaire designed to capture suicidal

tendencies. It consists of questions tapping suicidal plans, previous suicide attempts, and current suicidal intentions.

The therapeutic relationship

Working alliance. The Working Alliance Inventory (WAI; Horvath & Greenberg, 1989) is a transtheoretical measure of the working alliance that was designed to apply to diverse therapeutic orientations and modalities and is one of the questionnaires most frequently used to measure the working alliance (Busseri & Tyler, 2003). In this study, the short version of the instrument (WAI-S, Tracey & Kokotovic, 1989) was used. Busseri and Tyler (2003) have shown that the two versions correlate highly in terms of their psychometric and predictive qualities, and are thus interchangeable. The WAI-S is a 12-item self-report questionnaire consisting of three subscales designed to assess three primary components of the working alliance: 1) how closely client and therapist agree on and are mutually engaged in the goals of treatment ('goal' subscale: reliability coefficient in this study: α= .79), 2) how closely client and therapist agree on how to reach the treatment goals ('task' subscale: reliability coefficient in this study: α= .70), and 3) the degree of mutual trust, acceptance, and confidence between client and therapist ('bond' subscale: reliability coefficient in this study: α= .75). The composite score (reliability coefficient in this study: α= .83) is used as a global measurement of working alliance. Respondents were asked to rate each statement on a 7-point Likert scale ranging from 1 (never) to 7 (always). Two versions of the WAI-S are available: a client version and a therapist version. Both versions were used in this study.

Outcome Measurements

Posttraumatic stress. The revised version of the Impact of Event Scale (IES-R; Weiss & Marmar, 1997) was used to assess symptoms of posttraumatic stress. The scale consists of 22 items constituting the subscales 1) intrusions, 2) avoidance, and 3) hyperarousal, the three main characteristics of psychological dysfunction after a traumatic life event. Participants were asked to indicate the frequency of each symptom over the past 7 days on a 4-point Likert scale. The presence of a PTSD diagnosis was assessed using a German formula (Maercker & Schützwohl, 1998). The diagnostic sensitivity of this regression formula is .76, its specificity is .88.

Depression and anxiety. The depression and anxiety subscales of the short form of the SCL-90 (Brief Symptom Inventory, BSI; Derogatis, 1992) were used to measure the effects of treatment on psychological dysfunction in dimensions related to symptoms of posttraumatic stress. The two subscales consist of six items each. Each item is rated on a 5-point Likert scale (0 = not at all, 4 = extremely).

6.2 Results

Scores on the IES-R indicated that the 48 participants suffered greatly. The mean scores on the intrusions (M = 23.1, SD = 6.5) and avoidance (M = 19.4, SD = 9.9) subscales were in the upper regions of the norm table for Dutch PTSD patients (Kleber & Brom, 1986). Neal et al. (1994) found that an optimum cut-off score for the IES (which compromises the avoidance and intrusion subscales) of 35 produced the highest predictive value. Of the 48 participants 75% scored above this cut-off. The lowest scores in the sample were 22 indicating that all participants had at least a subsyndromal PTSD.

6.2.1 Dropout as an indication of therapeutic alliance

First, those who terminated the treatment early (dropout 17%, n = 8) were compared with those who completed the program in terms of demographic variables. Chi-square analyses failed to reveal any significant differences between dropouts and completers at the .05 level in terms of sex, educational level, or marital status, and a T-test showed no significant differences at the .05 level in terms of age or years since the trauma. T-tests were also conducted to assess differences between dropouts and completers in pretreatment psychopathology: no significant differences were found for depression (BSI) (t= .78, df= 46, p= .439), anxiety (BSI) (t= .84, df= 46, p= .405), posttraumatic symptoms (IES-R) (t= -1,077, df= 46, p= .287), or Working Alliance scores (WAI) (t= -.639, df = 41, p= .527). Note, however, that WAI scores were only available for three dropouts. The other dropouts terminated therapy before the WAI was administered.

6.2.2 Patients' pretherapy status and ratings of treatment relationship

Focusing on the 40 patients who completed the course of therapy, zero-order Pearson correlations were used to assess the relations between variables (see table 6). Bivariate analysis of relationships between pretreatment psychopathology and working alliance scores revealed an overall inverse relationship, though this finding did not reach a statistically significant level, with the exception of avoidance and bond (r= -.35, n= 40, p< .05) and anxiety and bond (r= -0.34, n= 40, p< 0.05).

Table 6: Means, standard deviations, and correlations of patients' scores on the Working Alliance Inventory (at 4th session) and initial symptoms (at 1st session) (N= 40).

	M	SD	1	2	3	4
WAI Patients						
1. Goal	5.8	.77				
2. Task	5.7	.80	.90			
3. Bond	6.2	.75	.31	.15		
4. Composite	5.8	.62	.90	.83	.64	
IES-R						
Intrusions	24.4	6.2	.12	.04	-.11	.04
Avoidance	18.9	10.2	-.12	.11	-.35*	-.19
Hyperarousal	21.6	6.7	.09	.02	-.20	-.08
BSI						
Anxiety	9.5	3.2	-.16	-.11	-.34*	-.26
Depression	10.4	4.0	.09	.01	-.13	-.04

6.2.3 Association of the working alliance with therapy outcome

As indices of client outcome, the residual gain scores on each subscale of the self-report measures (BSI, IES-R) were calculated. Residual gain scores were reversed as appropriate so that higher scores indicate greater improvement (e.g., greater reduction in psychopathology). These residual gain scores across the patients were correlated with their scores on the WAI. Table 7 shows partial correlations between the patients' scores on the Working Alliance Inventory (subscales and composite) and their posttreatment scores on target variables (IES-R, BSI) after partialing out initial symptom levels. The first four columns of correlation show patients' ratings, the last four columns show therapists' ratings.

Table 7: Means, standard deviations, and correlations of the Working Alliance Inventory patient (WAI/P) and therapist (WAI/T) ratings and residual gain (*N*= 40).

	M	SD	WAI/P goal	WAI/P task	WAI/P bond	WAI/P comp.	WAI/T goal	WAI/T task	WAI/T bond	WAI/T comp.
IES-R res. gain										
Intrusions	13.0	9.4	.15	.17	.01	.16	.08	.09	.05	.08
Avoidance	11.8	10.6	.22	.22	-.12	.13	.19	.25	-.22	.08
Hyperarousal	13.0	9.0	.09	.09	.13	.15	.03	-.08	-.05	-.04
BSI res. gain										
Anxiety	4.9	4.2	.27	.24	.19	.33*	.30	.27	.09	.25
Depression	6.0	4.4	.27	.29	-.03	.21	.17	.21	.13	.20

Positive correlations were found between the patients' ratings of the working alliance and therapy outcome. However, with the exception of the relation between the WAI composite score and anxiety (r=.33, n=40, p<.05), these correlations did not reach statistical significance. For the most part, positive correlations were also found between the therapists' ratings of the working alliance and the outcome, although these did not reach statistical significance either. Multiple regression analyses were used to further explore possible mediator or suppressor effects of the working alliance on outcome variables (residual change in IES-R composite score and residual change in BSI anxiety and BSI depression). Results revealed that the working alliance, as rated by patients, did not exert a significant direct influence on posttraumatic symptoms (adjusted *R* square= -.026; $F(1,38)$= .007, p= .932); depression (adjusted *R* square= -.026; $F(1,38)$= .005, p= .944); or anxiety (adjusted *R* square= -.017; $F(1,38$ = .358, p= .553).

6.2.4 Relationship between therapists' and patients' ratings

As shown in table 8, bivariate analyses of relations among working alliance scores revealed low correlations between patients' and therapists' composite working alliance scores (r= .36, n= 40, p< .05). This result is in line with previous research and confirms that patients and therapists differ in their evaluations of the working alliance. A t-test on the composite score revealed that patients rated the working alliance as being significantly better than their therapists did (t= 2,218, df= 39, p< .05).

Table 8: Correlations between patients' (WAI/P) and therapists' (WAI/T) ratings on the Working Alliance Inventory (WAI-S) (*N*= 40).

	M	SD	WAI/P goal	WAI/P task	WAI/P bond	WAI/P comp.
WAI/T goal	5.8	.80	.11	.09	.36*	.27
WAI/T task	5.6	.78	.22	.25	.18	.29
WAI/T bond.	5.6	1.1	.23	.26	.38*	.37*
WAI/T comp.	5.6	.73	.22	.24	.36*	.36*

6.3 Discussion

The aim of this study was to investigate the quality and the possible influence of an internet-based therapeutic relationship on treatment outcome. To our knowledge, this was the first study in which the effects of the working alliance have been systematically evaluated in an internet-based therapy approach. Bearing in mind that the generalizability of our findings is limited by the small sample size and the narrow diagnostic range of clients, we now turn to the research questions raised above.

Does baseline psychopathology predict the quality of the working alliance? Although low, an overall inverse relationship was detected between the severity of pretreatment psychopathology and the working alliance rating, indicating that patients who experienced more severe symptoms at the beginning of the treatment tended to have a less positive relationship with their therapist. This is in line with previous research by Taft, Murphy, Musser, and Remington (2004), who found a significant inverse correlation of r= -.31 between psychopathology and early working alliance ratings in face-to-face therapy.

Is the quality of the therapeutic alliance linked to treatment outcome? The results failed to confirm the hypothesis that a strong working alliance early in treatment would predict positive psychological changes later in treatment. However, almost all of the correlations were positive, indicating that residual gains on outcome measures were associated with higher rather than with lower mean WAI scores, except in the relation between working alliance and anxiety. The finding that the WAI failed to predict therapy outcome in our sample stands in marked contrast to the findings for most face-to-face studies. This discrepancy may be attributable to a number of factors. One explanation for the lack of effect may be the almost uniformly high levels of alliance ratings

(i.e., restricted range) obtained in this study, perhaps due to the self-selected sample. Most of the patients were recruited through the internet, which suggests that they were already comfortable with this medium. Research has shown that computer experience influences the way people judge internet-based contact. In their study, Mallen, Day, and Green (2003) showed that the more familiar participants were with internet-based contact, the more positively they judged that contact to be.

Another possible reason for the failure to find more substantial relationships between the quality of the working alliance and treatment outcome has been proposed by Stiles et al. (1998), who found great variability in the correlation with outcome measures taken at different stages in the therapy. They suggest that this might explain why various studies in which the working alliance was only measured on a single occasion produced inconsistent alliance/outcome correlations. This line of reasoning suggests that the question is not whether the working alliance is more important in a particular type of therapy, but rather whether the alliance is being measured in a way that is appropriate to that particular therapy. The time of administration of the WAI (in terms of the number of sessions) has been found to influence the rating of the working alliance (Horvath & Luborsky, 1993; Tracey & Kokotovic, 1989). It has also been suggested that treatment outcome may be particularly well predicted by the quality of the working alliance as measured in early sessions (Horvath & Luborsky, 1993; Horvath & Symonds, 1991; Stiles et al., 1998). As is standard practice in face-to-face studies, the therapeutic alliance was assessed early in the therapeutic process in the present study, after the fourth writing session (Busseri & Tyler, 2003). At that point, however, there had been only three therapist/client contacts, which may not in fact have been sufficient to evaluate the therapeutic alliance in online therapy. It could be that, given the different conditions under which the working alliance develops in internet-based treatment approaches, administering the WAI later on in the therapy might yield more accurate measurements.

Alternatively, although the alliance has been shown to predict the outcome of other modes of delivery, it may not be a crucial factor in facilitating positive psychological change in internet-based manualized therapies. The treatment applied in this study incorporates principles derived from cognitive-behavioral theory, with standardized

instructions and a fixed treatment manual, and focuses on client empowerment and self-efficacy. It may be that the nonspecific factor of the therapeutic relationship played a less important role than it does in less structured face-to-face therapy.

Do patients' and therapists' ratings of the working alliance correlate? As expected, the correlations between the patients' and therapists' ratings of the working alliance were low. This finding is in accordance with data from face-to-face therapies, which have shown that therapists' and patients' views of the therapeutic alliance differ markedly.

Can a positive and stable relationship be established through the internet? Patients reported high levels of therapeutic alliance early in treatment. The patients' ratings of the therapeutic relationship in our study were even higher than in face-to-face studies. Hersoug, Hoglend, Monsen, and Havik (2001) administered the WAI-S to *N*= 270 patients with multiple clinical disorders in the 3rd session of a conventional face-to-face therapy approach. Compared to the mean composite score in their study (*M*= 4.94, *SD*= 1.08), our patients' ratings of the internet-based relationship were more than one standard deviation higher (*M*= 5.8, *SD*= 6.2), as shown in Table 6. The patients' positive evaluation of the therapeutic relationship indicates that a therapeutic alliance can be established through the internet. Furthermore, a strong working alliance can be expected to promote treatment adherence as assessed by factors such as dropout rates. Given that trauma victims have been shown to have compliance problems (Maercker, 2003; Scott & Stradling, 1997) and high dropout rates (up to 28%; Foa, Rothbaum, Riggs, & Murdock, 1991), the high WAI ratings and the relatively low dropout rate (17%) in this study give reason to conclude that it was indeed possible to develop a positive and stable therapeutic relationship through the internet.

Limitations

The following limitations necessitate caution in the interpretation of our results. First, the modest sample size may have provided insufficient power to uncover the complex interplay of the online working alliance and psychopathology measures.

Second, only 17% of applicants could be included in the study, which might limit the external validity of the present findings. The same applies to the specific sample of trauma victims. Trauma survivors have been noted by many clinicians to have difficulty in tolerating the interpersonal nature of therapy, particularly "the [need] to trust another person with his or her pain" (Turner, McFarlane, & van der Kolk, 1996, p. 538). Given that trauma victims are especially prone to feelings of guilt and shame, they might be especially drawn to the medium of internet, where visual anonymity enables them to disclose painful and shameful details more easily than in face-to-face settings. Extending this research paradigm to clinical samples other than trauma victims could help to clarify this relationship.

Third, further research efforts should be initiated to address the possibility that the results are only valid for users who are already comfortable with the internet due to self-selection. A direct comparison of an online intervention and a face-to-face intervention as a randomized control trial would be indicated to investigate how the text-based bond formed in online therapy compares and contrasts with the in-person therapeutic alliance.

Limitations notwithstanding, the findings presented here are of interest because they indicate that a stable and positive relationship can be established online, although the quality of the relationship does not predict treatment outcome. The rapid growth of internet-based treatment approaches makes it likely that online therapies will become an enduring component of the psychotherapeutic landscape. One line of future research will be to identify predictors of a positive therapeutic relationship. A major challenge when building online relationships is to become aware of the nuances in the written language used in this context (Skarderud, 2003), which has accents, ambiguities and individual styles, as well as the use of emoticons (emotion + icon; e.g., a happy face ☺). Clinicians who work online should be given clinical training focusing on features of written communication. In addition, further work is needed to determine whether the role of the working alliance differs as a function of the mode of delivery, and to disentangle the relationships between the therapeutic alliance, specific cognitive-behavioral techniques, and treatment outcome. It also remains to be seen whether working alliance scores will predict long-term reductions

in psychopathology rather than focusing on short-term changes in psychological functioning, as was the case in this study.

7 Internet-based treatment for PTS reduces distress and facilitates the development of a strong therapeutic alliance

On the internet there are thousands of virtual communities that specifically involve issues of substantial personal significance, among them loss and, grief, suicide, as well as child abuse. Typically, these websites provide information and offer forums to share and discuss these experiences. A considerable number of trauma victims use this medium as a way of coping with their experiences. Traumatic experiences are often associated with stigmatization and intense feelings of shame and guilt (Kubany, Haynes, Abueg, & Brennan, 1996). In addition, many victims report feeling alienated and estranged from the world. They refrain from social interactions and experience social isolation although at the same time they often feel a great need for social support (Maercker, 2003; Maercker, & Müller, 2004). The internet provides a protected environment where participants can easily control and regulate the degree of intimacy they want to share without the fear of real-life judgment, rejection, or devaluation. This way of communicating lessens social risks and inhibitions and encourages the disclosure of painful experiences or shameful thoughts (Hopps, Pepin, & Boisvert, 2003; Suler, 2001; Walther, 1996). Van de Werker and Prigerson (2004) were among the first researchers to provide evidence on the protective effect of internet use and email contact in bereaved individuals (N= 293). They explored the amount of internet communication post loss at different points of time and found that the use of the internet served as a protection against psychiatric illness secondary to bereavement and enhanced quality of life.

The therapeutic community has only recently discovered the therapeutic potential the internet offers (for a review see Knaevelsrud, Jager, & Maercker, 2004). Lange et al. (2003b) were pioneers when developing an internet based therapy for trauma victims by combining a manual-based cognitive-behavioral writing therapy with the internet (Interapy). As several face-to-face trials have proven, cognitive-behavioral therapy (CBT) is a powerful and effective method of treating posttraumatic stress disorder (PTSD; Foa, 2000; Foa & Meadows, 1997). Lange et al. (2003b) showed that CBT could be successfully applied to the internet (Interapy). In a random controlled trial they treated 101 patients with posttraumatic stress (PTS) and showed that participants in the treatment

group experienced a significant reduction of PTS and other psychopathological symptoms compared to participants in the waiting list condition The prior aim of this study was to replicate the results of Lange et al. (2003b) and thereby to validate this treatment approach cross-culturally.

Furthermore, we were interested in the development and relevance of the online therapeutic relationship. While the treatment rationale of Interapy closely resembles conventional face-to-face CBT approaches with regard to content, the mode of delivery is fundamentally different. In face-to-face treatment therapists and patients see each other, share the same physical space, and are engaged in synchronic verbal and nonverbal communication. Online therapy is based on written (asynchronous) communication, geographical distance and visual anonymity. The therapeutic alliance also known as "working alliance" or "helping alliance" is conceived as an agreement on therapeutic goals and therapeutic tasks, as well as the development of bonds of mutual trust, acceptance, and confidence between patient and therapist (Bordin, 1979; Hatcher & Barends, 1996). The quality of the therapeutic relationship has been found to be important to the outcome in different forms of face-to-face therapy (for meta-analysis see Horvath & Symonds, 1991; Martin, Garske, & Davis, 2000). Until now very few empirical studies focused on the relevance of the therapeutic relationship online. Cook and Doyle (2002) evaluated differences in patient ratings of the working alliance between a small sample (N= 15) of online therapy patients and normative data from a comparable face-to-face counselling sample. The authors found comparable evaluations of the working alliance in both samples.

To gain a better understanding of the process and the mechanisms of change in online therapy we conducted a randomized controlled treatment study where the quality of the therapeutic alliance was systematically evaluated. Consequently, this investigation had several purposes. First of all, we aimed to replicate prior findings of the Dutch study with a different country sample. According to the results of Lange et al. (2003b), we expected a significant statistical and clinical reduction of posttraumatic stress symptoms, depression and anxiety and other indications of psychopathology in the treatment group. Furthermore, we hypothesized that treatment effects can be sustained during the 3 months follow-up period.

The second purpose of this study was to examine the quality of the working alliance, its development through the course of therapy, and

whether it moderates the impact of the observed change in symptoms. In accordance with findings of online relationship formation, it was expected that the working alliance would improve during the therapeutic process. Based on prior face-to-face research, it was expected to find significant correlations between patients' ratings of the therapeutic alliance at the end of treatment and treatment outcome. Patients' satisfaction with the online therapeutic contact was explored as an additional indicator of the online therapeutic alliance.

7.1 Method

7.1.1 Design

The design of the study comprised two between-subject conditions and two within-subject (pre-posttreatment) conditions. Participants were randomly allocated to the treatment or a waiting list control group. The present study is part of a larger study. Further analysis concerning the relevance of posttraumatic growth for treatment outcome are provided by Maercker and Knaevelsrud (2005).

7.1.2 Procedure and treatment

Potential patients browsed through the www.interapy.de website, which provided information about a) posttraumatic stress reactions, b) the study and its inclusion criteria, c) the treatment, d) the therapists and supervisors, and e) other treatment alternatives. Potential participants were sent screening questionnaires by e-mail. Those who passed the screening gave written informed consent and randomly assigned to the control or treatment group. Patients who were excluded from the study were provided with information on where they could receive treatment elsewhere.

Treatment. Patients were set two weekly 45-minute writing assignments over a five-week period (10 essays in total). Before and after the treatment, participants completed a set of questionnaires measuring the treatment effect. The therapy consisted of three treatment phases: 1) self-confrontation, 2) cognitive reconstruction, and 3) social sharing. After the fourth writing session, which constituted the end of the first treatment phase, the Working Alliance Questionnaire was administered. The treatment procedure is described in detail by Lange, Schoutrop,

Schrieken, and van de Ven (2002) and will only be outlined in brief here.

First Phase: self confrontation. At the beginning of the treatment, participants received psychoeducation about the mechanisms of exposure. In the first four essays, they were instructed to describe the traumatic event thoroughly. To increase the effect of the exposure, patients were asked to write in the first person and to give detailed descriptions of all sensory details they had experienced during the traumatic event (e.g., visual and auditory impressions). Participants were explicitly asked not to concentrate on style, grammar, spelling, or the chronological order of their essays.

Second phase: Cognitive restructuring. During the second phase, patients received psychoeducation about the principles of cognitive restructuring. The goal of this phase was to form a new perspective on the traumatic event. Participants wrote a supportive letter to an imaginary friend who had been through the same experience. In this letter, the patient was instructed to question the addressee's feelings of guilt and shame and to consider potentially positive consequences of the traumatic event for that person's life.

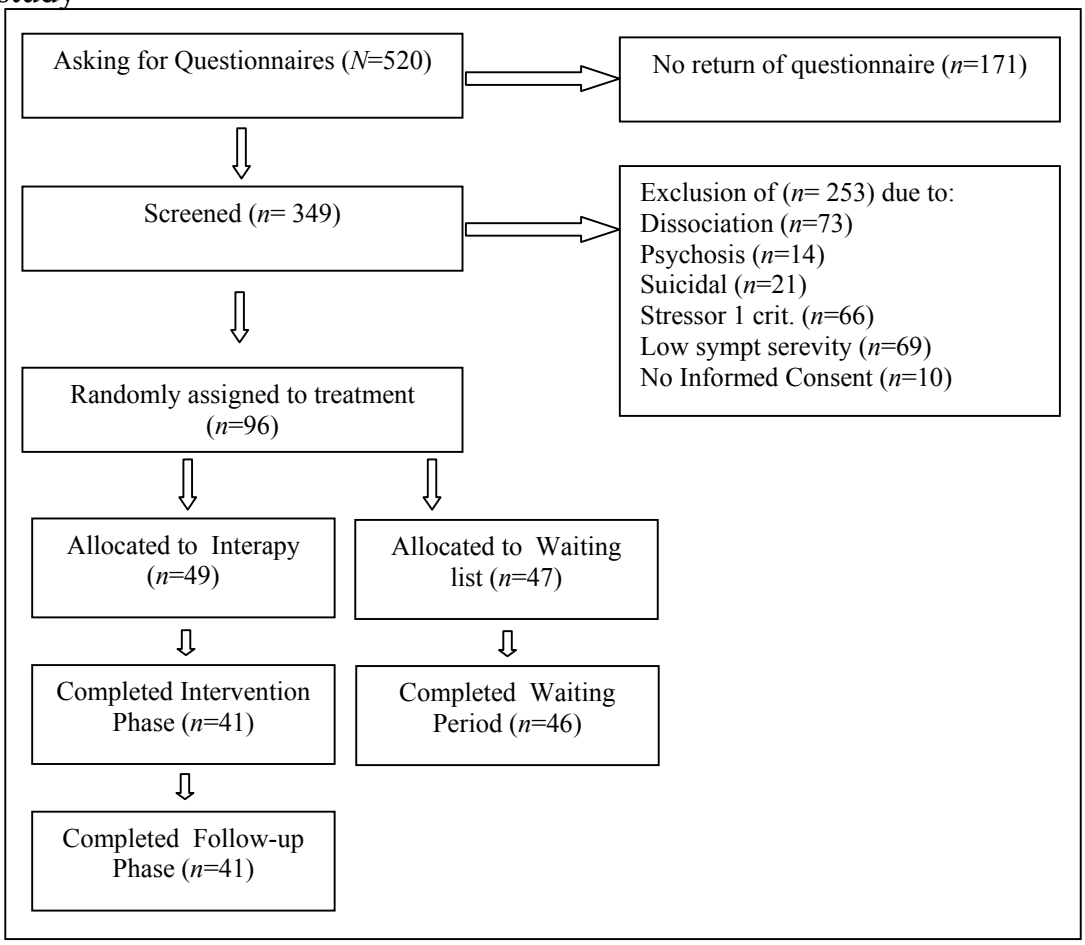
Third Phase: Social sharing and farewell ritual. During the third phase, patients received psychoeducation about the positive effects of social sharing. In a final letter, they then took symbolic leave of the traumatic event. Patients could address the letter either to themselves, to a close friend, or another significant person involved in the traumatic event. The letter did not ultimately have to be sent.

At the beginning of each writing phase, patients proposed individual timetables as to when they planned to write. Halfway through and at the end of each treatment phase, patients received feedback and further writing instructions, which were based on the treatment manual but tailored to patients' specific needs. Important aspects of this feedback were recognition and reinforcement of the patients' independent work, positive feedback and motivation, as well as frequent summaries and encouraging patients to voice questions and doubts.

7.1.3 Sample

Participants were recruited by means of radio and newspaper advertisements as well as advertisements posted on websites for different groups (e.g., crime victims, sexual abuse victims, bereaved parents). To be included in the study participants had to: 1) have experienced a traumatic event that occurred at least one month prior to treatment and that met the criteria specified in DSM-IV (APA, 1994), 2) be 18 years or older, 3) not exceed the cutoff scores for dissociation and psychosis (see screening criteria in the Assessment session), 4) not abuse alcohol or other drugs, 5) not consume neuroleptics, 6) be fluent in written German, and 7) not be receiving treatment elsewhere. Figure 1 summarizes the patient flow.

Figure 1: Flowchart showing progession of participants through the study



Of the 96 patients who participated in this study 49 were randomly assigned to the treatment group and 47 to the WLC condition. Participants were aged between 18 and 68 years, with an average age of 35 years; 90 % were female; 44% had a university degree, and a further

34% had a secondary school leaving certificate. As traumatic event, 42% reported sudden or violent death of a close person, 32% of the patients reported sexual abuse, incest, or rape. On average, the traumatic event had occurred 8 years previously (range 2-696 months). Scores on the IES-R indicated that the 96 participants suffered greatly. The mean scores on the intrusions (*M*= 23.1, *SD*= 7.1) and avoidance (*M*= 19.5, *SD*= 9.8) subscales were in the upper regions of the norm table for Dutch PTSD patients (Kleber & Brom, 1986). Neal et al. (1994) found that an optimum cut-off score for the IES (which compromises the avoidance and intrusion subscales) of 35.0 produced the highest predictive value. Of the 96 participants 70% (*n*= 67) scored above this cut-off. The lowest IES scores in the sample were 20.0 indicating that all participants had at least a subsyndromal PTSD. Table 1 summarizes descriptive statistics on these demographic characteristics for participants of each group. Of the treatment group eight participants (16%) and of the waiting list control group one participant (2%) did not complete the second assessment.

Table 9. Demographic characteristics and type of trauma of treatment and waiting list group

	Treatment group (N= 49)		**Control group (N= 47)**	
	Mean	**SD**	**Mean**	**SD**
Age (y)	34	11.5	36	9.6
Time since Trauma (y)	10.7	.60	10.3	.51
	N	**%**	**N**	**%**
Female sex	49	83	47	96
Marital status				
Single	21	43	18	38
Partnership	25	51	18	38
Education				
High school	12	24	21	45
University	26	53	16	35
Trauma				
Sexual abuse/Rape	20	39	11	23
Death of close person	18	37	22	47
Accident	-	-	6	13
Physical disease	4	8	5	11

7.1.4 Assessment

Screening criteria

Dissociation. Dissociative symptoms were tapped using the Somatoform Dissociation Questionnaire (SDQ-5; Nijenhuis, Spinhoven, van Dyck, van der Hart, & Vanderlinden, 1997). The scale consists of five items, which are rated on a 5-point Likert scale (1= not at all, 5 = very often). The internal consistency of the SDQ-5 is good (α= .80). Participants who scored above the cutoff score on the SDQ-5 were excluded from the treatment.

Risk of psychosis. Risk of psychosis was measured using the Dutch Screening Device for Psychotic Disorder (Lange, Schrieken, Blankers, van de Ven, & Slot, 2000). This seven-item inventory has high internal consistency (α =.82) and is a good predictor of psychotic episodes. In a Dutch study, a high level of agreement was found between the self-reports of 33 patients and their clinicians' reports on them (α =.85). Since no German norm group exists as yet, the data from the Dutch norm group were used. Participants were excluded if they scored above the cutoff score. Participants were also excluded if they indicated the use of neuroleptics.

Biographical information. To gather miscellaneous information, including the time since the trauma, educational level, degree of computer and internet experience, and typing skills a short checklist was administered.

Suicidal intentions. Risk of suicide was measured using the *Suicide Risk Assessment* (SRT; Arnoldi, van de Ven, Schrieken & Lange, 2000), a six-item self-report questionnaire designed to capture suicidal tendencies. The assessment was conducted through the telephone as soon as a person indicated on the BSI that he/she suffered from suicidal thoughts. It consists of questions tapping suicidal plans, previous suicide attempts, and current suicidal intentions. Participants were excluded if they scored above the cutoff score.

Quality of the therapeutic alliance

Working alliance. The Working Alliance Inventory (WAI; Horvath & Greenberg, 1989) was designed to apply to diverse therapeutic orientations and modalities. The WAI-S assesses three primary

components of the working alliance: 1) agreement between patient and therapist on the therapeutic tasks ('agreement on therapeutic tasks' subscale: reliability coefficient in this study: α= .73), agreement between patient and therapist on the therapeutic goals ('agreement on therapeutic goals' subscale: reliability coefficient in this study: α= .80), 3) the degree of mutual trust, acceptance, and confidence between client and therapist ('therapeutic bond' subscale: reliability coefficient in this study: α= .79). The composite score (reliability coefficient in this study: α= .88) is used as a global measurement of working alliance. In this study, the short version of the instrument (WAI-S, Tracey & Kokotovic, 1989) was used. Respondents were asked to rate each statement on a 7-point Likert scale ranging from 1 (never) to 7 (always). Two versions of the WAI-S are available: a client version and a therapist version. Both versions were used in this study.

Internet-specific questions. In addition to the WAI, questions concerning patients' satisfaction with the internet-based contact were asked (e.g. How did you experience the fact being treatedthrough the internet instead of face-to-face?)

Outcome Measures

Posttraumatic stress. The revised version of the Impact of Event Scale (IES-R; Weiss & Marmar, 1997) was used to assess symptoms of posttraumatic stress. The scale consists of 22 items constituting the subscales 1) intrusions, 2) avoidance, and 3) hyperarousal, the three main characteristics of psychological dysfunction after a traumatic life event. Participants were asked to indicate the frequency of each symptom over the past 7 days on a 4-point Likert scale (0,1,3,5).

Depression and anxiety. The depression and anxiety subscales of the short form of the SCL-90 (Brief Symptom Inventory, BSI; Derogatis, 1992) were used to measure the effects of treatment on psychological dysfunction in dimensions related to symptoms of posttraumatic stress. The two subscales consist of six items each. Each item is rated on a 5-point Likert scale (0 = not at all, 4 = extremely).

Mental and physical health. Physical and psychological functioning was measured using the 12 item version of the medical Outcome Study Self-report Form (SF-12; Ware, Kosninski, & Keller, 1996).

7.2 Results

7.2.1 Intention-to-treat analysis

We performed an intention-to-treat analysis that included all dropouts. If post-treatment data were not available for a participant, the baseline data were carried forward. The means and standard deviations for intrusions, avoidance, hyperarousal, depression, anxiety, mental health and physical functioning of each group at the different assessment periods are presented in Table 10. Also in this table are values for the Groups x Time interaction from the Groups x Times repeated measures MANOVA and whether group change is significant from pre-treatment to post-treatment (and from post-treatment to 3-month follow-up). Examining the results in Table 10 one finds significant change on all measures (except the physical functioning scale of the SF-12) from pre-treatment to post-treatment for those receiving the Interapy treatment. The three month follow-up revealed further arithmetic improvement from post-test to follow-up in the treatment group on all measures except the IES-R intrusion subscale. However, none of these changes were significant. As demonstrated in Table 10, also individuals in the waiting list control condition experienced a slight but significant improvement on trauma-related symptoms (intrusions, avoidance, hyperarousal) and depression.

Table 10: Psychological test results for the treatment group (Interapy) and the waiting list control group (WLC) at pre-treatment and post-treatment and 3-month follow-up: Intention-to-Treat Analysis.

						Groups x Pre-Post		
	Time	**Interapy**		**WLC**		***F***	***p***	**Eta²**
		M	SD	M	SD			
IES-R-Intr	Pre	23.0[a]	6.4	23.3[a]	7.8	*F* = 21.52	*p*<.001	.188
	Post	12.3[b]	8.7	20.7[b]	9.2			
	FU	12.7[b]	8.1	-	-			
IES-R-Avoi	Pre	19.9[a]	9.8	19.0[a]	10.0	*F* = 10.00	*p*<.005	.097
	Post	10.1[b]	10.2	16.0[b]	10.5			
	FU	9.7[b]	9.9	-	-			
IES-R-Hyp	Pre	22.1[a]	6.5	19.1[a]	9.5	*F* = 25.49	*p*<.001	.215
	Post	11.0[b]	9.0	16.5[b]	9.9			
	FU	10.0[b]	8.5	-	-			
BSI-Depr	Pre	10.1[a]	4.0	9.4[a]	4.7	*F* = 7.38	*p*<.05	.073
	Post	5.3[b]	4.3	7.2[b]	4.9			
	FU	4.9[b]	4.2	-	-			
BSI-Anx.	Pre	9.1[a]	3.4	7.5[a]	4.7	*F* = 10.73	*p*<.001	.103
	Post	5.2[b]	3.8	6.5[a]	4.7			
	FU	4.7[b]	3.8	-	-			
Sf-12 MH	Pre	34.6[a]	5.6	35.5[a]	6.5	*F* = 5.95	*p*<.05	.061
	Post	39.7[b]	7.4	36.9[a]	6.2			
	FU	40.0[b]	7.6	-	-			
Sf-12 PF	Pre	46.7[a]	5.2	46.0[a]	5.1	*F* = .001	n.s.	.000
	Post	47.2[a]	5.2	46.6[a]	5.2			
	FU	47.9[a]	5.0	-	-			

[a,b] Means within a column which share a superscripts do not differ at p=0.05 Note: Treatment group: *n* = 49, control group: *n* = 46

7.2.2 Clinical Significance

In addition to examining statistical significance, we were also interested in whether symptom changes were clinically meaningful. To assess the clinical significance of changes due to treatment, the proportion of individuals who returned to a normative level of functioning (change of diagnostic category) on the main dependent variable of interest was computed (Kendall & Grove, 1988). As there is no international used cutoff for the IES-R available the categorization is based on the IES including the subscales avoidance and intrusions with a cut-off of 35.0 (Neal et al., 1994). The data were analyzed with 2x2 chi squares comparing the two groups on whether the participants who initially met criteria for PTSD continued to meet it at post-treatment or not. The

analysis revealed that the treatment group was superior to waiting list ($\chi 2$= 9.292, df= 1, p=.002). In summary 74% of those with initial PTSD treated by Interapy had changed diagnostic category, compared to 21% of those on the waiting list who were assessed twice.

7.2.3 The Working Alliance

It was expected that the working alliance would improve during the therapeutic process. In addition, it was hypothesized to find a significant association between patients‘ alliance ratings at the end of treatment and treatment outcome.

Concerning the development of the online therapeutic alliance it was found that patients' ratings of the working alliance significantly improved during treatment (F 1,40) = 25.45, p<. 001). As shown in Table 11 there was no significant change in alliance ratings of the therapists'.

Post-treatment scores were correlated with patients' and therapists' ratings of the working alliance at the end of treatment. Table 11 shows partial correlations between the subscales and the composite scores of the patients' scores on the Working Alliance Inventory and the post-treatment scores after partialling initial symptom levels for post-treatment scores. Also shown in Table 11 are intercorrelations of the patient version of the WAI and correlations with the composite score of the therapists' ratings of the alliance.

At the end of treatment significant inverse correlations could be observed between the all subscales of the patients' alliance ratings and all psychological outcome measures (the SF-12 mental health is scored reversely thus a positive correlation was found in this case). The more positive patients experienced the therapeutic relationship at the end of treatment the less psychological symptoms they reported after the treatment. No significant correlation was found between physical function and alliance ratings. Composite scores of therapists' alliance ratings were significant negatively related to anxiety, depression and the SF-12 mental health subscale.

Table 11: Characteristics of the patients' Working Alliance Inventory (WAI-P) and correlations with therapist composite ratings (WAI-T) and psychopathology in the treatment group (N=41).

		Time of assessment			**Intercorrelations of the WAI**				**Correlation of 10th session data**				
Working Alliance Invent. (scale from 1-7)		4th M (SD)	10th M (SD)	Test *p*	2	2a	2b	2c	IES	BSI depr.	BSI anx.	SF12[1] Psych.	SF12[1] Physic
1	Therapists view therap. alliance (composite)	5.6 (.72)	5.8 (.98)	n.s.	.37*	.21	.52**	.17	-.30	-.46*	-.33*	.36*	.11
2	Patients view therap. alliance (composite)	5.8 (.64)	6.3 (.54)	>.001		.92**	.87**	.77**	-.50*	-.50*	-.50*	.35*	.20
2a	Agreement on therapeutic goals	5.8 (.77)	6.3 (.65)	>.005			.85**	.52**	-.53**	-.52*	-.40*	.40*	.13
2b	Agreement on therapeutic tasks	5.7 (.83)	6.2 (.69)	>.001				39*	-.53**	-.61**	-.38*	.48*	.10
2c	Therapeutic bond	6.2 (.69)	6.4 (.57)	>.05					-.25	-.17	-.48*	.03	.28

* $p < .05$; ** $p < .001$

[1] reversely coded

To estimate the variance accounted for therapeutic relationship on the main outcome variable (IES-R) multiple regression analyses were used to further explore possible mediator or suppressor effects of the patients' ratings of the working alliance. The pretreatment scores on the IES-R were entered as the first independent variable to control for pretreatment level of trauma symptoms. Results revealed that the working alliance rated by patients measured at the end of therapy predicted 15% of the variance in the post-treatment scores of the IES-R (adjusted *R* square= .148; $F_{2,39}$= 8.15, p< .05). Participants who had a better therapeutic relationship post-treatment benefited more from treatment.

7.2.4 Internet-specific aspects of the therapeutic alliance

After finishing the treatment patients were asked how they experienced the fact being treated through the internet. Results are shown in Table 12.

Table 12: Satisfaction with the online therapeutic contact (*N* =41)

Questions	Answers	Percentage
Did you miss face-to-face communication with your therapist for example with regard to support and instructions?	No	60%
	Yes	17%
	I don´t know	12%
How did you experience the fact being treated through the internet instead of face-to-face?	Pleasant	76%
	Unpleasant	5%
	I don´t know	19%
What was the contact between you and your therapist like?	Personal	86%
	Impersonal	2%
	I don´t know	12%

7.3 Discussion

The research questions we investigated in this study were twofold. Our first hypothesis addressed the overall impact of an internet based cognitive behavioral intervention (Interapy) on a sample of patients with (subsyndromal) PTSD. We found significant statistical and clinical effects that indicated symptom reduction of PTSD in the treatment group. Furthermore, a reduction in psychological symptoms related to depression, anxiety and mental health accompanied improvements in PTSD symptoms. However, the participants with trauma-related

symptoms and depression in the control group also improved significantly on trauma-related symptoms and depression. Furthermore, results indicate that treatment gains were maintained up to 3 months after the completion of treatment. This is in line with previous studies of internet-driven CBT for posttraumatic stress reactions (Lange et al., 2003b) and CBT interventions in face-to-face studies (Foa, 2000). This was the first independent, cross-cultural study which replicated the findings of Lange et al. (2003b) and validates this treatment approach indicating effectiveness, acceptability and the applicability across different countries. Although, several effective treatment approaches for PTSD have been available for a considerable time, consumer accessibility remains a problem due to difficulties in establishing and maintaining effective methods of dissemination of these treatment methods to treatment providers (Rauch & Cahill, 2003). In the Netherlands Interapy is already integrated into the regular health care system and is accessible nationwide. But since the assessment is exclusively based on questionnaires no formal diagnosis has been able to be established over the internet. In face-to-face interactions the assessment is carried out by trained psychologists during an interactive diagnostic process. Assessment models should be developed to be implemented over the internet. Thus, further evidence is needed before conclusions can be drawn about the generalizability to for a general population of PTSD patients can be drawn. Future research should directly compare face-to-face with internet based intervention after establishing a clinical diagnosis face-to-face to be able to evaluate the efficacy of internet based therapy more clearly.

Furthermore, we were interested in finding out whether a positive and stable relationship can be maintained online, whether the therapeutic alliance would improve throughout treatment and whether the quality of the online therapeutic relationship would have a moderating effect on treatment outcome. High ratings of the working alliance (at the end of treatment: patients *M*= 6.3; therapists *M*= 5.8 on a scale from 1-7) of both parties were obtained. Callahan, Price, and Hilsenroth (2003) assessed the working alliance in face-to-face therapy with the WAI at the end of treatment. They found mean alliance ratings of *M*= 5.5 (child abuse survivors) and *M*= 5.4 for patients with other psychiatric disorders. Surprisingly, the bond-dimension of the working alliance which comprised statements such as: ”Me and therapist trust each other” was rated particularly highly even at an early stage of treatment

(4th session). Also, a relatively low drop-out rate (16%) and the fact that 76% rated the exclusively internet-based contact as positive and 86% as personal (as shown in Table 12) indicated that a stable and positive therapeutic relationship could be established online.

Significant improvement of the therapeutic relationship rated by patients could be observed during the course of treatment. Findings on face-to-face studies identified three typical patterns: a stable alliance pattern, a linear growth pattern and a u-shaped pattern (Kivlighan & Shaughnessy, 2000). Possibly, the alliance formation observed in this study is similar to the development of the therapeutic relationship in face-to-face therapies. Alternatively, it might also be the case that the therapeutic alliance online, particularly in the eyes of the patients, may not have stabilized by the fourth writing session. This would be in line with Walther (1995) and Chan and Chen (2004) who found that the difference in quality between online and face-to-face relationships is moderated by the duration of the relationship and the frequency of contact. In other words, the degree of intimacy is influenced by the amount of information that is exchanged. Repeated assessment of the working alliance and an immediate comparison with a face-to-face intervention would be needed to find out whether this would also apply to online therapeutic relationships. Therapists' alliance rating showed no variation.

According to our hypothesis we found a substantial association between the late therapeutic alliance and treatment outcome. This is in line with previous findings of face-to-face studies of CBT showing that substantial amounts of outcome variance were uniquely accounted for by alliance scores (Gaston, Marmar, Gallagher, & Thompson, 1991). However, an alternative explanation for the association between working alliance and treatment outcome might be that ratings of the quality of the working alliance might have been confounded with outcome. Thus, instead of being a predictor for outcome the rating of the alliance would be an additional indirect measure of outcome. Previous analysis of the working alliance online early in treatment revealed no substantial association between the working alliance and treatment outcome (Knaevelsrud & Maercker, 2004). Further research is needed to understand the therapeutic contribution of the online therapeutic alliance. Measurement of the working alliance and symptom level at several points during the whole therapeutic process would help

to understand the relation between online therapeutic alliance and outcome.

In the current study, we sought to ascertain the efficacy of an internet-driven treatment for PTSD and the quality and the role played by the online therapeutic alliance. The examination of therapeutic alliance online is of particular relevance since it has proven to be a stable predictor in face-to-face therapy.

Among the limitations of this study is the screening strategy for the recruitment of the patients. We deliberately handled strict exclusion criteria for participation in this study. We excluded 72% (*n*= 253) of the patients who wanted treatment but did not meet the inclusion criteria. This might limit the generalizability of our results. Also, the sample was mainly female, better educated and younger than the general population. Another methodological concern might be the choice of the questionnaire. We used the frequently applied Working Alliance Inventory because of its pantheoretical nature which allowed its use in many different treatment approaches. However, the WAI was not designed for an internet-driven type of therapy and it might be that it is a less valid instrument for capturing an online therapeutic alliance.

Though the results of the present study are promising, there is a need for further study concerning the applicability and efficacy of online therapy and specific underlying processes such as the development of the therapeutic alliance and its distinctive cross-method features. Further analysis of the 18 month follow-up data and the examination of other potentially relevant moderators such as posttraumatic growth (Maercker & Knaevelsrud, 2005) will hopefully enhance our understanding of online therapeutic processes. Considering that online therapy is gaining acceptance (Ritterband, 2003) and provides a cost-efficient, worldwide accessible alternative it is imperative that we increase our understanding of this new treatment approach.

8 Discussion

A number of challenges currently face the field of PTSD treatment. The majority of individuals who suffer from PTSD do not receive the care they need (Kessler et al., 1995). High prevalence rates generate a need for the provision and dissemination of alternative accessible and cost-effective therapeutic services (Newman, 2004). The internet represents a unique opportunity to influence the availability of therapeutic service in a dramatic way. Online therapeutic services could help to eliminate disparities in health resulting from inequities in peoples' access to resources. Also, because of its visual anonymity, the internet might provide an alternative information and treatment opportunity for people who are not able to take advantage of traditional sources due to attitudinal barriers and embarrassment. Lange et al. (2000, 2001, 2003b) developed an internet-based, cognitive-behavioral treatment (CBT) for PTSD which they called Interapy. They found that the treatment effectively reduced posttraumatic stress symptoms and general psychopathology. The aim of the present study was to replicate prior findings of Lange et al. (2003b) in a German speaking population. Furthermore, we were interested in the quality of the online therapeutic alliance, its development and its relation to treatment outcome.

8.1 Efficacy of Interapy

First of all, we were interested in whether an internet-based cognitive behavioral intervention (i.e. Interapy) would help reduce posttraumatic symptoms and related psychopathology. As outlined in chapter two, Lange et al. (2000, 2001, 2003b) found significant improvements in trauma-related symptoms such as intrusions and avoidance as well as health-related measures such as depression, anxiety, and physical health. Consistent with the results of Lange and his colleagues, we found that patients in the treatment group displayed significant statistical and clinical improvement in posttraumatic symptoms. This improvement was significantly greater than that displayed by patients in the waiting list control group. Furthermore, a reduction in psychological symptoms related to depression, anxiety and mental health accompanied improvements in PTSD symptoms. However, also the waiting list control group, small but significant improvements in psychological functioning could be observed. We found large effect

sizes from pre- to posttest for the treatment group. Prior to treatment 76% scored above the cut-off for PTSD. After completing treatment only 17% scored above the cut-off criteria for posttraumatic stress disorder. Furthermore, results indicated that treatment gains were maintained up to 3 months after treatment completion. Results of the current study are compelling for two main reasons. First of all, our findings illustrate that carefully conducted manual-based cognitive behavior therapy interventions can substantially decrease symptoms of both PTSD and related psychopathology in a relatively brief period over the internet. Second, this study generated strong support for the cross-cultural applicability of Interapy. Our findings clearly confirmed previous results concerning the efficacy of Interapy for treating posttraumatic stress reactions in the Netherlands (Lange et al., 2003b).

A number of reasons might be accountable for the efficacy of Interapy. First of all, it is based on a well-established CBT manual. As indicated in the first chapter, CBT has proven to be an effective treatment approach for PTSD. It seems plausible that the effective principles of CBT can also be transmitted over the Internet. In addition, Interapy is a highly structured and focused treatment. The absence of audiovisual contact may have reduced the amount of distraction from the core elements of treatment: self-confrontation and cognitive restructuring (Lange et al, 2002). Also, characteristics of the program such as teaching the patient about the nature of his or her disorder, maximum transparency regarding the therapeutic procedure, and the explicit and frequent use of supportive communication may have been useful to the participants. Lange et al. (2003b) also theorized that a crucial advantage of Interapy might be the fact that the therapist does not have to react immediately. This gives the therapist time to carefully formulate feedback and the possibility to consult a supervisor before reacting to the patient.

An important dimension when evaluating the value of a treatment alternative is its feasibility. Feasibility refers to the degree to which a treatment can actually be delivered to patients and includes aspects such as the location of the treatment (e.g. home or clinic), the patient's willingness to engage in treatment (acceptability), compliance with treatment, and ease of administration and dissemination of the treatment (APA Task Force, 1995). Interapy provides worldwide accessibility to psychological treatment. In the Netherlands it has been shown that this

treatment approach could be readily translated to clinical practice and is also feasible in a natural environment. Our results further validate this innovative treatment approach and indicate its effectiveness, acceptability and applicability throughout different countries.

Scores on the IES-R indicated that patients were by no means only mild cases but showed high level of trauma symptoms. To allow international comparison, we calculated the mean scores of the IES (including the intrusions and avoidance subscales) and found a mean IES score in the present study of *M*= 43. In comparison, Blanchard et al. (2003) reported a mean score of *M* = 40 in a sample of motor vehicle accident survivors with PTSD. Paunovic and Öst (2001) reported a mean score of *M* = 45 in a sample of refugees with PTSD. In a sample of crime victims a mean *M* = 41 was found (Maercker & Müller, 2004). Furthermore, most patients in our study suffered from chronic PTSD. The mean duration of symptoms was 10 years. Lange et al. (2003b) found similar results in their study. They reported a mean duration of PTSD symptoms of 9 years. Lange et al. (2004) found neither symptom severity nor duration of symptoms to be predictive for treatment outcome. Accordingly, it can be concluded that Interapy can help a wide range of trauma victims with severe and chronic symptoms as well as patients with milder symptoms. This is contrary to the proposition of Tate and Zabinsky (2004) who argued that computer-based interventions might be best suited for patients who lack severe symptoms. Certainly, computer–based treatments do not suit all patients but, as demonstrated in our study, symptom severity is not an indicator for the effectiveness of this treatment approach. However, Interapy has not explicitly been tested for complex forms of PTSD (also known as DESNOS). Possibly, complex PTSD may necessitate an extended and more therapist-guided form of treatment to address the whole spectrum of symptoms. Thus, the range of the efficacy of Interapy for all forms of posttraumatic stress has not yet been sufficiently tested.

8.2 The therapeutic alliance

Research from face-to-face clinical settings suggests that the therapeutic relationship has an impact on outcome, independent of technical interventions (Castonguay, Goldfried, Wiser, Raue, & Hayes, 1996). This has stimulated us to explore the online therapeutic relationship. First of all, we expected that a stable and positive

therapeutic relationship could be established through the internet. Furthermore, it was hypothesized that the patients' ratings of the therapeutic alliance online early in treatment would account for a substantial part of outcome variance.

Indeed, we found that a stable and positive therapeutic alliance could be established through the internet. This was reflected in high ratings for the therapeutic relationships of the patients as well as for the therapists. As indicated in chapter 6 alliance ratings in our study were found to be higher than in face-to-face therapy (Hersoug, Hoglend, Monsen, & Havik, 2001). Furthermore, good treatment compliance was reflected in low dropout rates. Foa et al., (1991) reported dropout rates up to 28%. In the current study we found a dropout rate of 16%. When asking patients about having contact with their therapists exclusively via email, the vast majority indicated that they were satisfied. In fact, 76% of the participants rated the exclusively internet-based contact as positive and 86% as personal. Thus, we found that technology need not compromise the therapeutic alliance. A sense of being in an intimate collaborative relationship with another person may also be facilitated in online therapy. A large body of research documents the importance of the therapeutic alliance to treatment outcome in face-to-face therapy (for reviews see Horvath & Symonds, 1991; Martin et al., 2000). Based on these findings, we expected to find a similar pattern in online therapy. However, our findings were less clear. In contrast to most face-to-face studies examining the relation between alliance and outcome, we found only a moderate association between the patients' ratings of the quality of the therapeutic alliance after the 4th writing session and treatment outcome. There are several possible reasons for the relatively weak predictive results on outcome in this study. First of all, we used the Working Alliance Inventory (WAI). The WAI is a questionnaire which has been proven to be a reliable instrument for a broad range of therapeutic approaches. However, the WAI was initially developed for face-to-face therapy and may, therefore, be less valid for online therapy. Another problem might have been the time of assessment. The alliance was measured after the fourth writing session. Until that moment there had been only three therapist/client contacts, which may in fact not have been sufficient to evaluate the therapeutic alliance in online therapy. Since the exchange is exclusively by text-based, alliance building might demand more time in online therapy. This line of reasoning suggests that the question is not whether the working alliance

is more important in a particular type of therapy, but rather whether the alliance is being measured in a way that is appropriate to that particular therapy. It is possible that, given the different conditions under which the working alliance develops in internet-based treatment approaches, administering the WAI later on in therapy might yield more accurate measurements. However, the relatively low association between the WAI and therapy outcome might also be a realistic reflection of the lesser relevance of the therapeutic alliance in online therapy. As argued in chapter 6, the highly structured treatment manual clearly focuses on self-responsible and active patient behavior rather than on the therapeutic relationship. This hypothesis, however, is based on the assumption that nonspecific factors, such as the therapeutic alliance, and technical factors are independent. This is in marked contrast with Bordin's (1979) concept of the therapeutic alliance which argues that therapeutic bond, tasks and goals are interdependent and mutually influencing factors.

Clearly, greater predictive power was obtained when using the assessment of the alliance at the final session. We observed substantial increases in outcome variance accounted for by alliance scores from early to late points in therapy. One should carefully note that there is a substantial likelihood that the alliance ratings may have been confounded by treatment outcome. Thus, change in symptoms may have been a confounding third variable that accounted for the relationship between the alliance and change in symptoms. Findings from face-to-face therapy support this view. Klein et al. (2003) found that changes in depressive symptoms had an effect on ratings late in therapy. Also, in our study outcome and alliance were rated by the same source (patients). This methodological problem, known as the "halo" effect, implies that if the patient believes he or she has improved, it is also likely that he or she will rate the alliance as positive.

Furthermore, we found that patients' ratings significantly improved from the 4th to the 10th (final) session. The improvement of the online therapeutic alliance over time could reflect a pattern which was previously found in the study of online social relationships. Chan and Cheng (2004) compared the development of online and offline (face-to-face) friendships of 162 individuals. They found different patterns in the development of the relationships with a higher degree of relatedness in offline friendships initially but reported that these differences

diminished over time. This is in line with Walther's (1995) findings. He carried out an experimental observation of task-related groups of college students and compared the communication qualities between of face-to-face and computer-mediated groups. The author studied dimensions such as immediacy/affection, similarity/depths, receptivity/trust, and task/social orientation. It was found that communication modality was only critical in the beginning of the study. At the third meeting, which took place in the fifth week of the study participants reported the same degree of intimacy regardless of communication modality. Walther (1995) concluded that the degree of intimacy is influenced by the amount of information that is exchanged. As the online communication lacks nonverbal information, additional time might be required to compensate for these missing cues. Therapists' ratings were found to remain stable throughout the therapeutic process. This result is in line with previous findings in face-to-face therapy (Bachelor, & Salame, 2000; Gaston et al., 1991).

Finally, it was found that patients' ratings predicted outcome better than therapists' ratings. There were a larger number of significant partial correlations when the alliance was reported by the patients than when it was rated by the therapists. This finding is in line with the conclusions of Horvath and Symonds (1991). In their meta-analysis of the relation between alliance and outcome, they showed that patients and independent observer ratings of the alliance tended to be better predictors of outcome than therapist reports.

Summarizing the results, we found that a stable and positive therapeutic alliance can be established over the internet. However, in contrast to prior findings of face-to-face therapy, only moderate associations between patients' early ratings of the therapeutic alliance online and outcome were found. Furthermore, we found substantial associations between final alliance ratings and treatment outcome. The last finding, however, is difficult to interpret because of the potentially confounding impact of symptom change on alliance ratings. After all, it is not so surprising that a positive relationship can be established over the internet. The internet has become a naturally integrated part of our lives and changed our social environment like no other communication media in the last 50 years. People use the internet to look for various types of information to assist them in their daily lives (Cotton, & Gupta, 2003). The main reason, people use the internet, however, is to

communicate with other people via email (Van Eimeren, Gerhard, & Frees, 2003). And the principal reason why people send email messages is to maintain interpersonal relationships (Barg & McKenna, 2004). Thus, the internet has become widely accepted as an effective medium through which serious and indeed intimate communication can take place and emotionally charged relationships can be formed. This might be interpreted as further indication that this medium also has the potential to foster therapeutic alliances.

This was the first study which has systematically evaluated the effects of the working alliance in an internet-based therapy approach. There is a great need for further research to clarify the role of the therapeutic relationship as a process variable to understand the unique pattern of alliance formation in online therapy. Little is known about the alliance's true function in an online therapeutic setting or how it develops. Research in this field may help us to understand what conditions are required to establish psychological contact between patient and therapist. More precisely, what constitutes psychological contact if the only contact is via the computer? Until now these questions are largely still unanswered.

Another notable difference between face-to-face treatment and online therapy is the fact that in online therapy the whole therapeutic process is archived. The communication is saved in computer files or printed out on paper and can be read and reread at any time. This may provide heightened potential for retrospective self-reflection and an opportunity to observe ones own therapeutic progress during therapy and after therapy. Murphy and Mitchell (1998) suggested that this could also be used especially well as relapse prevention. By rereading their own writings and the instructions of their therapists, patients can get back in touch with initial reactions and alternative and more constructive actions/thoughts they developed as a result of their therapy. It would be interesting as a future study to compare follow-up results from two different conditions that either prevent or allow the use of the therapeutic documents after therapy ended to gain more insight into the influence of the archiving of the therapeutic process.

Another important aspect would be to identify those elements and mechanisms of the treatment that may be related to the observed psychological changes. The Interapy manual consists of three therapy

modules: self-confrontation, cognitive restructuring, and social sharing. As we mentioned earlier in chapter two, a discussion exists about the mechanisms that most effectively promote the processing of traumatic events in face-to-face therapy. Marks et al. (1998) demonstrated that exclusively cognitive approaches produced similar outcomes to exclusively behavioral or combined approaches. The relative contribution of the three treatment modules of the Interapy manual has not yet been empirically tested. However, Schoutrop (2000) presented first evidence on the unique impact of the three treatment modules (self-confrontation, cognitive restructuring, and social sharing) in her studies on face-to-face writing therapy. As indicated in the second chapter, her work on writing therapy provided the basis for the Interapy treatment manual. The author compared the relative effectiveness of writing instructions that are designed to activate specific mechanisms identified by cognitive and behavioral theories as being important in the process of coping with and adjusting to trauma. In a randomized controlled study *N*= 102 traumatized individuals were assigned to five different treatment groups. Writing instructions were adjusted so that either a behavioral therapeutic process (self-confrontation) or a cognitive therapeutic process (cognitive restructuring) was induced, or both. These conditions were compared with each other, with a waiting-list control group, and a "neutral-writing" control group. It was found that all trauma-focused conditions showed significant fewer intrusions and reported significant less avoidance behavior in comparison to the control groups. Interestingly, it emerged that the "cognitive reconstruction" group experienced as much improvement regarding intrusions and avoidance as individuals who received a combined instruction. Thus, the combination consisting of both self-confronting and reconstructing elements did not result in greater benefits than those achieved by the cognitive reconstruction instruction alone. Furthermore, it was found self-confrontation also resulted in fewer intrusions and, to a lesser extent, to a decrease in avoidance behavior. These results clearly question the necessity of including explicit self-confrontation. However, in a later study that included a third treatment module 'social sharing', the aforementioned finding of the superior role of cognitive restructuring above self-confrontation could not be replicated. Social sharing was operationalized as writing and sending a dignified and thoughtful letter about the traumatic event to a significant other from who the participant could expect social support. The social sharing module was included because it was assumed to have a beneficial effect

due to the extra effort made by the patient to create a meaningful document, the symbolic power this document exerts and the possibility to share the traumatic experience with a significant other person. A 12-month follow-up revealed that participants who received the additional social sharing instruction in combination with a cognitive-behavioral instruction showed the largest decline in symptoms. These findings point to the fact that all three treatment modules might be needed to address the whole spectrum of symptoms. Thus, similar inconsistent results that occur in conventional talking therapies emerged regarding the precise contribution and underlying principles of the different treatment approaches (see chapter 2). As mentioned above, the unique impact of the single treatment modules in Interapy as an online-based writing therapy has not been subject to explicit study. Through a systematic variation of the Interapy treatment modules and repeated measurements these processes could be clarified.

Furthermore, a direct comparison between a writing task as designed by Pennebaker (outlined in chapter 3) and the Interapy manual might also promote our understanding of the mechanisms which may cause the beneficial outcomes. There is only limited knowledge of the effect of the Pennebaker paradigm on a clinical population. Gidron, Peri, Conelly, and Shalev (1996) employed the Pennebaker writing task as treatment for 14 patients with PTSD in a randomized controlled study. The control group wrote about neutral topics. The authors reported negative effects of structured writings and found relatively large increases in health care visits and avoidance symptoms at the 6-week follow-up in the treatment group. The authors conluded that written disclosure without coping skills training may not be recommended for PTSD patients. However, in a recent randomized control trial, Sloan and Marx (2004) showed positive effects of the Pennebaker writing approach in a clinical population. They included 49 participants with moderate PTSD symptom severity and demonstrated that the treatment group experienced a significant reduction of trauma-related symptoms. However, these reductions failed to be clinically significant. More research is needed to gain a more detailed picture of the effect of exclusively disclosure approaches on clinical populations. Interestingly, Sheese, Brown, and Graziano (2004) examined the application of the disclosure paradigm of Pennebaker to the internet. They investigated the efficay and impact of an email-based disclosure intervention in a sample of 546 undergraduate students. Participants were randomly

assigned to a treatment group writing on a traumatic topic and a control group writing about a non-emotional topic. As outlined by Pennebaker, participants wrote once a day for three days. As an assessment tool the authors used a self-reported health survey covering general health and well-being. It was found that the disclosure intervention significantly improved health outcomes. Unfortunately, as this study did not include a face-to-face writing condition it does not allow for the assessment of the relative effectiveness of email-based interventions in contrast to traditional lab-based writing interventions.

Another interesting aspect is how the therapeutic online relationship interacts with the specific elements of treatment. This might be especially relevant to the application of exposure. As the Interapy treatment immediately starts with self-confrontation it might be that this is a particular strain for the alliance since trust is needed to follow the instructions of the therapist. The use of immediate exposure in the treatment of PTSD was criticized by Cloitre, Koenen, Cohen, and Han (2002). They argued that the unprepared application of this emotionally intensive form of treatment could lead to symptom exacerbation, high dropout rates and compliance problems. Therefore, they argued that skills training in affective and interpersonal regulation might help to address these problems through establishing a strong therapeutic relationship before exposure. They found that the therapeutic alliance and mood regulation skills prior to exposure predicted the success of the following confrontation. It must be noted that Cloitre et al. (2002) only included a waiting-list control group. Thus the potential benefits of the additional skills training is impossible to assess based on the given data. In our study we could not confirm the hypotheses of Cloitre et al. (2002). We found a generally low dropout rate and could not detect any specific pattern of dropout rates throughout the different phases. In contrast, high alliance ratings were found after the fourth writing session immediately after the exposure phase. Thus, in our study, we did not find any signs that immediate exposure exerts a particular strain on the therapeutic alliance. Alternatively, one could speculate that the interpersonal difficulties frequently reported to accompany PTSD might play a less prominent role in self-confrontation through the internet as in face-to-face therapy. The focus of the first treatment phase of Interapy is on strengthening the self-management in the emotional processing of the trauma memories. The patient determines the pace and extent of exposure, which may help the patient to regain a sense of

control and self-efficacy. Possibly, this might even enhance the quality of the therapeutic relationship.

Apart from specific elements of treatment, it would be interesting to explore other unique aspects of the online therapeutic contact which might improve or threaten the therapeutic relationship. Andersson, Lundström, and Ström (2003) investigated whether therapist-initiated telephone contact would reduce the dropout rate in an internet-based self-help program for recurring headaches. In a randomized controlled trial with 44 participants they found that additional therapist involvement did not reduce the dropout rate. Also, it has not been examined yet whether the therapeutic alliance would be influenced by an initial face-to-face meeting prior to the start of the online therapy. Walther (1996) pointed out that the absence of visual and auditive cues would result in stronger processes of transference. Binik, Cantor, Ochs, and Meana (1997) even argued that the asynchronic computer-mediated communication with a therapist might be similar to interacting with an analyst sitting behind the patient facilitating the self-investigatory process which Freud suggested was crucial to psychoanalysis. Walther (1996) proposed the tabula rasa quality of computer-based interaction would lead to an idealization of the communication partner which would result in a more positive and intimate information exchange. Thus, communicating with one's therapist through the internet would not interfere with but even promote the development of a therapeutic alliance. However, until now we can only speculate on factors key to a successful online therapeutic alliance. It would be interesting to further examine this idea though comparing a therapeutic approach and manipulating the degree of personal contact between therapist and patient.

8.3 Limitations of the study

There are limits on the generality of our findings that warrant comment. A critical aspect is the fact that assessment was exclusively based on questionnaires. This implies that no formal diagnosis could be established. Also, we used strict exclusion criteria. More than two thirds of the applicants were not included based on exclusion criteria: low symptom severity/no trauma according to DSM IV (39%), dissociative tendencies (21%), psychotic tendencies (4%), or suicidal tendencies (6%). It is not clear whether results may apply to individuals with

comorbid conditions. In addition, participants were predominantly female, university educated and younger than the general population. The current findings are based on self-report. There is a clear need to examine the effectiveness of Interapy in formerly diagnosed PTSD by using independent assessment of outcome in addition to self-report. It is also likely that individuals that are interested in computer communications self-selected in our program. Also, the sample size may not have been large enough to detect the complex interplay of the online working alliance and psychopathology measures. We used the Working Alliance Inventory (WAI) which was originally devised for alliance assessment in face-to-face therapy. Although it had been used in a prior online study (Cook & Doyle, 2002) its methodological appropriateness for online therapy has not been evaluated yet. Finally, our findings concerning the online therapeutic alliance are restricted to the population of trauma victims. Due to feelings of shame and guilt that are frequently connected to PTSD, these patients may be especially attracted to the internet and might feel more comfortable to disclose intimate information in a visually anonymous context. Accordingly, these findings cannot be generalized to other clinical populations. Finally, a 3-month period of follow-up is too short to determine whether treatment effects remain stable in the long-term. To address this issue, an 18-month follow-up is currently being conducted.

8.4 Limitations and challenges of online therapy

Online therapy clearly has its limitations and disadvantages. It does not suit all patients and some patients prefer face-to-face treatments for their problems. The amount of therapist guidance or human supervision that is necessary for safe and effective use of computer-delivered treatment programs is likely to vary as a function of psychopathology. For some individuals/disorders minimal therapist contact may be sufficient whereas a more intensive therapist contact may be beneficial for other diagnostic categories (Scogin, Hanson, & Welsh, 2003). Yet, at this point in time, no consistent guidelines exist concerning the applicability of online therapy for specific profiles of symptoms or disorders. There is a basic consensus that online therapy supplies insufficient support for patients who have a strong tendency for dissociation, have difficulties in reality-testing, are suicidal, show Borderline-symptoms, or are psychotic (Suler, 2001a). However, these assumptions are based on clinical knowledge and are not empirically

verified. Accordingly, they have been repeatedly called into question (Ball, McLaren, Summerfield, Lipsedge, & Watson, 1995; Bouchard et al. 2000; Zarate et al., 1997). There are justified reservations about the shortcomings of online therapy, particularly with regard to the absence of nonverbal cues as diagnostic evidence, which makes psychological assessment through the internet a critical issue. In general, computer-assisted assessment offers a number of advantages such as data completeness and standardization, immediacy of data entry and elimination of transcription costs and errors (Taylor & Luce, 2003). Also, traditional paper-and-pencil self-report instruments can be easily transferred to computer-based administration. Ritter, Lorig, Laurent, and Matthews (2004) compared the psychometric property of internet-based versus mailed questionnaires. They found that questionnaires administered via the internet were reliable and answered as often as the mailed questionnaire with less recruitment effort required. It has also been argued that the use of computers reduces the tendency to respond in a socially desirable way. This is especially true for more sensitive or potentially stigmatizing information (Turner et al., 1998). However, exclusively computer-assisted assessment does not allow a clinical diagnosis to be made. Nonverbal emotional and behavioral information, which is a valuable source of information in face-to-face therapy, is lost.

The lack of additional confirmative information in online-therapy may also increase the risk of misunderstandings. To address that challenge, a specific therapist training focusing on unique aspects of the internet-based communication and relationship skills is recommended. Successful training in the communication of empathy mandates that clinicians adapt their response style in accordance with how each particular client defines or experiences helpfulness. Thus, it is critical that therapists and clients share a commonality of language. This is especially important when written language is the only mean of communication.

Furthermore, although precautions can be taken by a thorough screening, the possibility of symptom deterioration and crises cannot be excluded. Because crisis management is difficult to realize if the only contact is over the internet, standard procedures should define how to cope with potential crises. One way to deal with this risk would be to establish contact with the patients' medical system prior to treatment.

By this means, cooperation with a medical doctor or a clinician the patient sees could be established. Such a network would allow a comprehensive treatment plan including various interacting individuals (e.g. physicians, clients, family members, care givers) (Taylor & Luce, 2003).

8.5 Ethical considerations

The implementation of computerized therapies is associated with a variety of unique ethical considerations and concerns not encountered in face-to-face therapy. The most frequently cited concern is privacy of health information on the internet. Although efforts are taken to increase anonymity, the participants must be informed that confidentiality cannot be guaranteed. Another problem is that due to a lack of sufficient online health-content regulation, patients run the additional risk of becoming victims of unreliable providers. Professional organizations such as the German Society of Psychology (DGP) or specialist organizations such as the International Society for Mental Health Online (ISMHO) have developed detailed operating principles to guide clinicians who provide online clinical health. These entail informed consent about the process, information about the therapist, potential risks and benefits, safeguards and alternatives as well as standard operation procedures (such as legal requirements, confidentiality and the structure of the service, records and evaluation). Standard procedures have to be established to verify the patient's identity and to determine if the therapist is licensed, qualified and certified. Also, neutral organizations should be established to observe and survey this process and to guarantee for credibility of the therapist. The legal system has not yet arrived at a consistent definition of jurisdiction as it pertains to online therapy. Which country's judicial system applies to the therapeutic encounter when the patient resides in Switzerland and the therapist in the Netherlands? Where does treatment occur? We are confronted with a number of ethical and judicial questions which are yet not fully resolved. These issues have to be addressed urgently, as psychotherapy will be increasingly offered by telephone, videophone or email (Norcross, Hedges, & Prochaska, 2002).

8.6 Further research

Internet-based interventions provide not only extended opportunities for psychological treatment but also hold novel opportunities for clinical research. Because of the wide accessibility of the internet, larger samples will be available for outcome research. Since the complete therapeutic process is documented in writing, content-analyses may be conducted with the essays from participants, helping us to understand the therapeutic process to a greater extent. Similarly, web-based research has opened the door to a new era of cross-cultural investigation.

The empirical research is not strong enough to objectively evaluate all the benefits and limits of online therapy and further evaluation of clinical outcomes is needed. At this point in time, only very limited data exists concerning the long-term efficacy of online interventions. Also, as proposed by Lange et al. (2003b) there is a clear need to compare online treatments directly with matched face-to-face treatments in randomized controlled trials with diagnoses based on structured interviews. Those studies would help to reveal not only whether online therapy works but also to compare the relative merits of face-to-face therapy and online therapy. In a pilot study, Beer and Breuer (2003) compared 20 couples following a highly structured short-term couple therapy with 22 couples following the internet-driven version of this treatment approach. In both treatment conditions a significant improvement of dyadic adjustment was reported with no significant difference between the two treatment settings. However, due to the absence of a control group and a non-random group assignment to the two treatment conditions, the conclusions that can be drawn from these findings are limited.

Another important line of research is the examination of whether different personality traits may effect benefits of internet use. We still know very little about the population which is attracted to online treatment alternatives. It is unclear whether they represent the normal community or if they represent a specific subgroup characterized by certain personality features. It may be that outcomes of internet use may be moderated by personality traits (such as introversion or social anxiety) and usage patterns (Kraut et al., 2002). More research is needed to evaluate the circumstances and types of clients that seem to be a good match for online therapy.

The latest development of communication media and technology as well as increasing data signalling rates allow new and different ways of treating psychological problems. Until now, researchers have attempted to identify replicable ingredients of the psychotherapeutic encounter and translate these features into computer-delivered behavioral health interventions (Cavanagh & Shapiro, 2004). Future research should not only concentrate on aspects known to be relevant in face-to-face therapy but also study features which are unique to internet-based or computer-based therapy.

8.7 Conclusion

Internet-based interventions are not meant to replace face-to-face treatments. Rather, they provide a treatment alternative for individuals who might otherwise choose not to receive treatment (e.g., because of embarrassment) or who might be unable to obtain treatment (e.g. because of geographic or physical reasons). They might also provide an additional tool to enhance traditional therapy as an adjunctive component. In the present study, we cross-culturally examined the treatment approach of Interapy in randomized controlled trial according to high methodological standards. Our findings provide support for Interapy as a viable and effective means of offering psychological treatment to clients suffering from PTSD. As indicated by patients' high alliance ratings, it can be assumed that factors such as empathy for the patient's distress, communication of hope for improvement, and maintaining patients' motivation can be transported through the internet. Thus, rather than assume that crucial elements are lost when human relationships are mediated by technologies, it seems more fruitful to examine how they have changed. The internet provides a new platform from which mental health care can be conducted. Because of rapid product development and the combination of different technology we will have to continuously re-examine how these developments are incorporated into and influence clinical practice. As clinicians, we should carefully examine relevant clinical, ethical and legal issues related to providing health care via the internet. Potentially the benefits are vast, as there is the possibility for greater numbers of patients to receive more services than ever before.

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